Republic of Liberia
MINISTRY OF HEALTH AND SOCIAL WELFARE

MATERNAL AND NEW BORN DEATH SURVEILLANCE AND RESPONSE (MNDSR)

TECHNICAL GUIDELINE
2013
Table of contents

i. Acronyms:

ii. Forward

iii. Acknowledgements:

1. Introduction and background
   a. Rationale
   b. Goal & Objectives of the guideline
   c. Operational definitions

2. Section 1
   a. Maternal Death Review (MNDR) System
   b. Maternal and New born death structure
   c. Roles and responsibilities of key actors

3. Section 2: data collection process:
   a. Source of information and identification
   b. Identification
   c. data collection
   d. investigation
   e. analysis and interpretation
   f. dissemination
   g. response and feedback
   h. evaluation

4. Section 3: Implementation Plan
   a. Legal and ethical considerations
   b. Awareness creation among health care workers and the community
   c. Monitoring and evaluation

5. References

6. Annexes

   Annex 1: Maternal and new born death notification form

   Annex 2: Maternal death review and reporting form for hospital and health centers doing comprehensive EMOC services

   Annex 3: maternal death review and reporting for community

   Annex 4: New-born death review and reporting for hospital

   Annex 6: Newborn death review and reporting form for health center and clinic
Annex 7: Newborn death review and reporting form for community

List of tables & figures

Figure 1: Maternal and newborn death surveillance and response system: a continuous action cycle at community, facility, district, county & national level

Figure 2: Maternal and newborn death review at community level

Figure 3: Maternal and newborn death review at facility level

Figure 4 Pathway to survival

Table 1: Maternal data to be collected

Table 2: Newborn data to be collected

Table 3: MNDSR monitoring framework
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Dr. Bernice Dahn MD, MPH

Chief Medical Officer / Deputy Minister of Health

Ministry of Health and Social Welfare
List of abbreviations/ Acronyms

CEmONC; Comprehensive Emergency Obstetric and New born Care
CHAI: Clinton Health Access Initiative
CHS: County Health Services Unit
CHSWB: County Health and Social Welfare Board
CHVs: Community Health Volunteers
D&C: Dilatation and Curettage
DHO: District Health Officer
DPC: Disease Prevention and Control
EPI: Expanded Program on Immunization
FHD: Family Health Division
gCHVs: General Community Health Volunteers
HDP: Hypertensive Disorder of Pregnancy
HF: Health Facility
HIV: Human Immuno Deficiency Virus
HMIS: Health Management Information systems
IEOS: Integrated Emergency Obstetric and Surgery
KPI: Key performance indicator
LMDC: Liberian Medical and Dental Council
M&E: Monitoring and Evaluation
MCHIP: Maternal Child Health Integrated programme
MMR: Maternal mortality Ratio
MNDSR: Maternal and Newborn Death Surveillance Review
MNH: Maternal and Newborn Health
NMR: Newborn Mortality Rate
OIC: Officer In-charge
OPD: Outpatient Department
OR: Operating Room
RBHS: Rebuilding Basic Health Services
RH: Reproductive Health
TBAs: Traditional Birth Attendants
TOR: Term of Reference
TTM: Trained Traditional Midwife
UNFPA: United Nations population Fund
UNICEF: United Nations Children Education Fund
VA: Verbal Autopsy
WHO: World Health Organization
WRA: Women of Reproductive Age
Forword

The Ministry of Health and Social Welfare is implementing the Integrated Disease Surveillance and Response (IDSR) strategy for surveillance activities across all levels though it provides trivial guidance to maternal and new born death surveillance and response.

Over the last 5 years, improvement in socio-economic and better quality health systems have resulted to marginal reduction in maternal and new born mortality. Maternal mortality still remains unacceptably high at 770 deaths per 100,000 live births (UNFPA, WHO, UNICEF and World Bank, Trend Analysis report, 2010): a slight decrease from the 2007 LDHS 994/100,000 live birth. Liberia is on track for achieving MDG4 with new born mortality ratio at 32 deaths per 1,000 live births.

Most of these deaths are due to preventable or treatable conditions such as postpartum hemorrhage, anemia, unsafe abortion, and eclampsia in mothers, and asphyxia and sepsis in neonates. The high mortality rates are largely also attributable to lack of access to quality health services. Skilled birth attendants conduct only a third of all deliveries-most births occur at home, assisted by traditional midwives.

Cognizant of these sobering figures, a presidential decree was issued to request notification of all maternal deaths to the MOHSW at all levels and accurate registration of births and deaths emphasized and monitored.

Significant reduction of maternal deaths will require counting every case at every level to permit an effective response that prevents future deaths. A maternal and new born death surveillance and response system can provide the essential information to stimulate and guide actions to prevent future deaths and improve its measurements of progress to address the problem.

This guideline has been developed to reflect national priorities, set policies and standards in order to adequately account for maternal and new born deaths at all levels and to inform and guide public health actions and appreciate their outcomes and impact.

The guideline is intended for use as:

- A national reference for MNDSR activities at all levels
- A set of definitions for threshold levels that trigger some actions for response to MND
- A resource for developing training, supervision and evaluation of MNDSR activities
- A guide for improving early and systematic reporting, preparedness and response.

The guideline is intended to be used by Health workers at all levels; Community Health Volunteers; County Health Teams; County and community Maternal and New born review teams; District Health Officers; Health training institutions; Other public health experts, including NGOs in the country.

Dr. Bernice T. Dahn

Deputy Minister of Health/ Chief Medical Officer, MOHSW, RL
Introduction

The death of a mother and new born is a tragedy that has an immense impact on the wellbeing of the family and society at large. Most causes of maternal and new born deaths in Liberia can be prevented or treated. Hence, the need for active surveillance system that document and ensures that all deaths are followed by appropriate actions to reduce future death, cannot be over emphasized.

A vital component of the surveillance system is the provision of information about the underlying factors contributing to the deaths and suggestion how they should be tackled. Response to such system should aim at eliminating preventable causes of maternal and new born morbidity and mortality. MNDSR is a model of such a system. MNDSR responds to Millennium Development Goal 4 and 5, which aim to reduce the maternal and new born mortality ratio.

Although Liberia is making progress in achieving MDG 4, MDG 5 is far from being achieved.

An estimated 287 000 women worldwide died from pregnancy and its complications in 2010, 99%, of them in developing countries (in text citation). Reported maternal mortality underestimates the true magnitude by up to 30% worldwide and by 70% in some countries (In iext citation). Inadequate measurement contributes to a lack of accountability and in turn to a lack of progress.

This MDG is far from being achieved. To accelerate progress, the Secretary-General of the United Nations launched the Global Strategy for Women’s and Children’s Health in September 2010 (7). The Commission on Information and Accountability (CoIA) was then formed to determine the most effective international institutional arrangements for global reporting, oversight, and accountability on women’s and children’s health. Among CoIA’s key recommendations is a focus on getting better information for producing better results. It recommends setting up efficient health information systems that combine data from facilities, administrative sources, and surveys (7).

The framework for implementing these recommendations, developed by the World Health Organization, includes establishing MNDSR systems and improving vital registration in each country.

The UN Commission on the Status of Women has an even more ambitious goal: the elimination of preventable maternal mortality and morbidity (8) through universal access to family planning methods, skilled birth attendance, and basic and comprehensive emergency obstetric care. By providing information to guide corrective actions and monitoring real-time numbers of maternal deaths, MNDSR is an essential element of any strategy for eliminating preventable deaths (9).

The following pages introduce the concepts of maternal and new born death surveillance and response. How integrated surveillance works and the objectives of MNDSR will also be
discussed. Next, an explanation of how MNDSR functions are described in this guideline is given and how county, district and community health workers and review teams can use it, with support from the MoH, to strengthen surveillance and response. Finally, the reader is introduced to the most likely accidental or incidental causes of maternal deaths and maternal and new born thresholds for action.

**Rationale**

Current methods in many developing countries use large-scale periodic surveys. These surveys are expensive and data are back dated and delayed.

MNDSR would assist in computing country-owned maternal and new born deaths data. It also provides more reliable MNMR at lower levels thereby showing where the greatest burden of mortality is located. Additionally, it provides essential information for programme mid-year reviews and monitoring.

The immediate added values include timely notification, assessment, and confirmation of deaths, increase awareness and advocacy. Most importantly, it serves as accountability tools for health services provision, policy makers and managers for monitoring progress.
Definition:

What is Maternal and New Born Death Surveillance and Response (MNDSR)?

MNDSR is the on-going systematic collection, analysis, and interpretation of maternal and new born deaths data. It includes the timely dissemination of the resulting information to those who need them for action. It is essential for planning, implementation, and evaluation of public health practice.

The tenth revision of the ICD-10 defines a “Maternal Death as: the death of a woman while pregnant or within 42 days of 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”

A New born death is defined as death of a live born infant within the first 28 days of life

It is a strategy that enhances existing surveillance system and intersectoral linkages to facilitate efficient utilization of scarce resources, effective and prompt leveraging of various sectors capabilities for a better approach to reduce avoidable maternal and new born deaths.

How is Maternal and New born Death surveillance integrated?

- All surveillance activities are coordinated and streamlined. Rather than using scarce resources to maintain separate vertical activities, resources are combined to collect information from a single focal point at each level.
- Several activities are combined into one integrated activity and take advantage of existing surveillance functions, skills, resources and target populations. For example, surveillance activities for acute flaccid paralysis (AFP) often address surveillance for neonatal tetanus, measles and other diseases or unusual events. Thus, DHOs who routinely visit health facilities receives information about other priority diseases and maternal and new-born deaths in the area.
- The district level is the focus for integrating surveillance functions. This is because the district is the first level in the health system with staff dedicated to all aspects of public health such as monitoring health events in the community, mobilizing community action, encouraging national assistance.
- Surveillance focal points at the district, county and national levels collaborate with epidemic response committees at each level to plan relevant public health response actions and actively seek opportunities for combining resources.
- The focus is on the creation of an overall public health surveillance system with sufficient capacity for detecting, confirming, reporting and responding to diseases and events of public health importance.
Goal and Objectives of the MNDSR technical guideline

The overall goal of the MNDSR guide line is to guide effective implementation and scale up of MNDSR in systematic, standardized and integrated manner

The specific objectives of MNDSR are to:

- Strengthen the capacity of the country to conduct effective surveillance activities: train personnel at all levels; develop and carry out plans of action; and advocate and mobilize resources.
- Guide programme Managers in the implementation and supervision of the MNDSR
- Facilitate standardization and harmonization of the MNDSR process at community, facility, district, county and national
- Improve the use of information to detect changes in time in order to conduct a rapid response to maternal and neo born deaths; monitor the impact of interventions: for example, declining maternal and new born deaths, planning; and management
- Improve the flow of surveillance information between and within levels of the health system.
- Increase involvement of clinicians in the surveillance system.
- Emphasize community participation in reporting and response to maternal and new born deaths to prevent future deaths
- Trigger epidemiological investigations in detection, investigation and reporting of maternal and new born deaths and in the implementation of effective public health interventions.

Who is this document for?

This technical guidance introduces critical concepts of MNDSR, including goals, objectives, and specific instructions for implementing each surveillance component. Further, it explains how counties and national level can set up MNDSR system to strengthen surveillance and response activities. The intended leadership includes health professionals, health-care planners and managers, those who measure maternal and newborn mortality and policy makers working in maternal and newborn health. Stakeholders who can drive change should be involved in all aspects and processes of setting up MNDSR to ensure that the recommended changes take place.

How MNDSR functions described in this guideline?

This guideline assumes that all levels of the health system are involved in conducting surveillance activities for detecting and responding to priority diseases and conditions (even though the different levels do not perform identical functions). MNDSR builds on the work done to implement IDSR in Liberia and MNDSR implemented in other countries. It helps us understand the events surrounding maternal and newborn deaths. It stresses the need to respond to each maternal and newborn death with actions to prevent similar deaths in the future, and to
collect data on all maternal and newborn deaths using clearly defined data sources and processes for identification and notification

**Key components in the technical guidance**

- A maternal and newborn death should be made a notifiable event and incorporated in the notifiable disease reporting system
- Identification and notification of maternal and newborn deaths
- Analysis – data aggregation and interpretation
- Response
- Dissemination of results, recommendations, and responses
- Monitoring and Evaluation (M&E) for MNDSR system
- MNDSR implementation plan
Key messages of this guide:

- Avoiding maternal and newborn death and improving quality of care is possible, even in resource constrained settings. Obtaining the right kind of information to guide action is critical.

- Every maternal and new born death is a tragedy and should be a notifiable event that is reviewed, discussed and that leads to corrective actions to address the problems encountered.

- Understanding the underlying factors leading to the deaths is critical to preventing future mortality.

- Data collection must be linked to action. A commitment to act upon findings is a key prerequisite for success.

- As a starting point, all maternal and new born deaths in health facilities and communities should be identified, reported, reviewed and responded to with measures to prevent future deaths.

- While response is critical and the primary purpose of MNDSR, there is also a need to improve the measurement of maternal and newborn mortality by working to identify all deaths in a given area because otherwise we do not know if our actions are truly effective.
Operational definitions

**Maternal death:** is defined as 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. (ICD-10). It can be:

- **Direct obstetric death:** is maternal death resulting from complications of the pregnancy, labor or puerperium or from interventions omissions or incorrect treatment.

- **Indirect obstetric death:** is maternal death resulting from previously existing disease or newly developed medical conditions that were aggravated by the physiologic conditions

**Late maternal death:** is defined as a maternal death due to pregnancy (direct or indirect obstetric causes) that occurs from 42 to 365 days after the end of pregnancy.

**Pregnancy related death:** is defined as all deaths of women during or within 42 days of pregnancy regardless of cause.

**Maternal near-miss:** is defined as a woman who nearly died but survived a complication that occurred during pregnancy, child birth or within 42 days of termination of pregnancy. In practical terms, women are considered near miss cases when they survive life threatening conditions (i.e. Ruptured uterus)

**Severe maternal outcomes:** are maternal near misses and maternal deaths.

**Maternal death surveillance and response (MNDSR)** has been defined as "a component of the health information system, which permits the identification, notification, quantification, and the determination of causes and availability of maternal and new born deaths, for a defined time period and geographic location, with the goal of orienting the measures necessary for its prevention”.

There is a **role for each surveillance function at each level** of the health system. The levels are defined as follows:

**Community:** Represented by Community Health Volunteers (CHVs), Community maternal and new born death review team composed of village leaders (religious, traditional or political).

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1These guidelines focus on improving surveillance for public facilities. In districts or regions where reporting from public facilities is of good quality, integrate private and non-governmental organizations into the system.
**Health facility:** For surveillance purposes, all institutions (public, private, NGOs or others governmental) with outpatient and/or in-patient facilities are defined as a “health facility.”

**District:** The district is the basic level for delivery of the minimum health care package. It is mandated with micro-planning, organization, budgeting and management of the health services at this and lower levels. It carries an oversight function of overseeing all health care services within the district.

**County:** The County Health Team have the responsibility for the delivery of health services, management of human resource (HR) for county health services, supervision and monitoring of overall health sector performance. The District health services serve a population of the entire county.

**National level:** At the National level, the National Health System consists of the Ministry of Health through it relevant programmes include National Referral hospitals serving the national population. The central level where policies are set and resources are allocated. In relation to surveillance, this level reports on priority diseases.
Section One

1. Maternal and New born Death Surveillance and Response System

figure 1: Showing the steps in Maternal and New born Death Surveillance Response Systems in Liberia

- Step One –Establish the goal and objectives of the MNDSR system:

  **Goal:** to contribute to the reduction of maternal and new born morbidity and mortality.

  **Specific Objectives:**

  - Strengthen the capacity of the country to conduct effective surveillance activities: train personnel at all levels;
  - Develop and carry out plans of action; and advocate and mobilize resources;
  - Guide programme Managers in the implementation and supervision of the MNDSR;
  - Facilitate standardization and harmonization of the MNDSR process at community, facility, district, county and national
  - Improve the use of information to detect changes in time in order to conduct a rapid response to maternal and neo born deaths; monitor the impact of interventions: for example, declining maternal and new born deaths, planning; and management

Source: adopted from Hounton et al. 2013: page 3
- Improve the flow of surveillance information between and within levels of the health system.
- Increase involvement of clinicians in the surveillance system.
- Emphasize community participation in reporting and response to maternal and newborn deaths to prevent future deaths.
- Trigger epidemiological investigations in detection, investigation and reporting of maternal and newborn deaths and in the implementation of effective public health interventions.

**Step 2 – Identify maternal and newborn deaths based on WHO definition** - Use standard case definitions, identifying priority diseases, conditions and events. The first step in identifying maternal deaths is to assess all deaths in women of reproductive age (WRA) and identify those that occurred while a woman was pregnant or within 42 days of the end of a pregnancy (suspected maternal death). Newborn death, relating to death within the period immediately succeeding birth and continuing through the first 28 days of extra-uterine life:

- Any death of a WRA in a health facility should trigger a review of her medical record to determine her pregnancy status, and all newborn deaths. Suspected maternal and newborn deaths in the community should be reported and probable cause of death.
- Deaths occurring in health facilities should be identified and notified to the appropriate authorities within 24 hours, and deaths in communities within 48 hours. Notification should include “zero reporting on a weekly basis,” an active process of notifying suspected maternal and newborn deaths, whether or not any occurred.

**Step Three: Data collection**

Community level instrument should be very simple with few data requirements including, name, age, home address, sex for newborn, place & time of death, suspected cause of death, and pregnancy status. The following tools should be used to collect data from facilities and communities, which include maternal and newborn death notification form, facility & community-based MNDSR investigation form, facility-based MNDSR review form, medical file, MNDSR reporting forms. Prior to data collection, there should be a timely notification at all levels by mobile and any other means. Data should be recorded and promptly reported to relevant authorities.

**Step Four: Investigate and confirm deaths.** Ensure that the death is recorded and cause(s) identified. Gather evidence about what may have caused death and use it to select appropriate prevention strategies. A written summary of each death, including key findings, is prepared and presented to the committee that discusses the case, reviews all pertinent data, and completes a brief report on the medical cause of death (including Probable causes for deaths that occurred in communities), contributing factors, and avoid-ability. The committee then issues
recommendations, which may be broad or specific, to address avoidable factors noted by the review to prevent similar deaths in the future.

**Step Five: Analyse and interpret findings.** Compile the data, and analyse it for trends. Compare information with previous periods and summarize the results. The aim of aggregated data analysis is to identify causes of death, groups at highest risk, contributing factors, and emerging data patterns and to prioritize health problems to guide the public health response. The translation of MNDSR data into information meaningful for decision-makers, the medical community, and the public is important. The analysis is instrumental in monitoring and evaluating responses and detecting the impact of changes in health-care practices and health-seeking behaviours.

**Step Six: Develop dissemination mechanism**

Encourage future cooperation by communicating with levels that provided data on maternal and new born deaths, investigation outcome and success of response efforts. A plan for disseminating MNDSR results should be determined in advance. Flexibility must be built in because the results will not be known until the review data are analysed. The team involved in undertaking the MNDSR should be fully involved in the review, developing the recommendations, planning and promoting their implementation, and acting as advocates for change. Data should be aggregated or re-identified to individual families or providers cannot be identified; recommendations should be fed back to the health facilities and communities where the information was collected using language and dissemination methods tailored to the target audiences; and legal safeguards should be in place to prevent the use of the review findings in litigation. Key messages must get to those who can implement the recommendations and make a real difference towards saving mothers and new born lives.

**Step Seven: Prepare and respond. “EVERY MATERNAL AND NEW BORN DEATH IS A PUBLIC HEALTH EMERGENCY AND NEEDS IMMEDIATE INVESTIGATION AND INTER-SECTORAL ACTION TO PREVENT FUTURE DEATHS”**. Coordinate and mobilize resources and personnel to implement the appropriate public health response. Findings from reviews should lead to immediate actions to prevent similar deaths, at health facilities and in the community. In addition, responses may also be periodic or annual. Identification of patterns of particular problems contributing to maternal and new born deaths or geographical areas where deaths occur in greater numbers should result in more comprehensive responses. Responses should be tailored to address the problems identified in the community, health-care facility, and health-care system, as well as at the intersectoral level. The type of action taken will depend on the level at which the decisions are being made, the findings of the analysis, and the stakeholders involved. Improving quality of care is an important element of response at the health facility.
Evaluate the MNDSR system. Assess the effectiveness of the surveillance and response systems, in terms of timeliness, quality of information, preparedness, case management and overall response performance. Take action to correct problems and make improvements.

M&E takes place to improve the timeliness, quality, and completeness of information and ensure that the major steps in the system are functioning adequately and improving with time. Monitoring of the MNDSR system is carried out primarily at the national level. The framework for M&E includes standard indicators based on MNDSR principles: maternal and new born death as a notifiable event; facility-, community-, and district-level reviews; data quality; and percentage of recommended responses undertaken. Because the main purpose of MNDSR is to take actions to eliminate preventable maternal and new born deaths, the system is failing if this is not happening. In this case, a more detailed evaluation may be needed to assess how the system can function more effectively.

First: MNDSR provides information about avoidable factors that contributed to a maternal and newborn death and guides actions that need to be taken at the community level, within the formal health care system, and at the intersectoral level (i.e. in other governmental and social sectors) to prevent similar deaths in the future.

Second: MNDSR establishes the framework for an accurate assessment of the magnitude of women's deaths related to pregnancy. By having an accurate assessment of maternal and newborn mortality, policy and decision makers may be more compelled to give the problem the attention it deserves. In addition, evaluators will more accurately assess the effectiveness of interventions to decrease mortality rates. Ultimately MNDSR system will aim to identify every maternal and new born death in order to accurately monitor the impact of interventions to reduce it.
MNDSR Structure and Implementation

Figure 2: Showing the implementation and coordination Maternal and New born Death Review Systems (MNDR)

Structure and Function

The operational structure and scope of response may differ according to the local context and challenges. MNDSR implementation strategies consider local capabilities, limitations, logistical issues, budgetary realities, and legal requirements, and they must be adaptable and customizable. Prerequisites to implementation are intensive and inclusive planning and development of system-wide linkages and processes that foster communication and collaboration at all levels, agreement on the scale of coverage and design of the system, assessment of the current situation including mapping existing resources and identification of gaps, identification of regulations and legal protections in place, and identification of opportunities for cost-saving and achieving wider benefits.

The following settings are needed for successful implementation of maternal and new born death review
National Level:

The division of disease prevention and control will serve as the repository of active maternal and new born death data and share weekly update to both FHD and the wider targets. All MNDSR activities will be coordinated by the Maternal and New born Coordinator assigned in the division of Family Health. The Reproductive Health Technical Committee (RHTC) will serve as the technical working group to review, evaluate and monitor all aspect of maternal and new born health deaths and make relevant presentations to the national review committee.

National MNDSR Review Committee: Shall be composed of:

- Liberia Medical Dental Consul (LMDC)
- Directors of FHD and DPC
- Deputy Minister for Planning
- Assistant Minister of Vital Statistics
- Midwives Association and Anaesthetists Association
- UNICEF
- WHO
- UNFPA
- County Health Services
- Community Health Division
- NHP
- MCHIP
- RBHS
- CHAI
- The House Standing Committees on Health (House of Parliament)
- Maternal and Child Health Good Will Ambassador

The national MNDSR will be chaired by the Assistant Minister for Curative services and co – chaired by the Assistant Minister for preventive services. Director of Family Health Division will serve as secretary. The task force will convene quarter and more frequently when deemed necessary.

Roles and responsibilities of the National Review Committee:

- Participate in the revision/development of the national technical guidelines, tools and other relevant documents for MNDSR
• Coordinate the involvement of stakeholders in the planning and implementation of MNDSR interventions

• Mobilize resources to ensure sustainability of MNDSR activities at both national and county levels

• Review maternal and new born death data quarterly and recommend response actions

• Provide feedback to stakeholders on quarterly basis

• Conduct periodic spot check monitoring and provide technical support to counties

• Develop policy framework for MNDSR implementation

• Plan and coordinate mid-year review and monitoring of MNDSR implementation

• Evaluate the MNDSR system every 2 years

**County Level:**
The County Reproductive Health Supervisor coordinates all maternal and New born death activities within the county. The County Surveillance Officer collects, collate, analyse and interpret the weekly maternal and new born deaths data and disseminate to relevant bodies for action.

**County Maternal and New Born Death Review Committee:** It comprises a multidisciplinary professionals and stakeholders:

- County RH Supervisor
- County Health Officer
- County Diagnostic Supervisor
- County Surveillance Officer
- County Clinical Supervisor
- Community Health Department Director
- County Health Promotion focal person
- County Development Superintendents
- All Health partners

The County MNDSR will be chaired by the County Health Officer. County Reproductive Health Supervisor serves as secretary. The committee will convene monthly.
Roles & responsibilities of the county MND review committee include:

- Coordinate the involvement of stakeholders in the planning and implementation of MNDSR interventions
- Mobilize resources to ensure sustainability of MNDSR activities at both county and community levels
- Review maternal and newborn death data monthly and take appropriate actions
- Provide feedback to stakeholders on quarterly basis
- Conduct periodic spot check monitoring and provide technical support to health facilities and communities
- Plan and coordinate quarterly review and monitoring of MNDSR implementation

Facility based MNDSR committee:

Hospital: Composed of:

- Medical Director
- Nursing Director
- OB Supervisor
- MCH Supervisor
- Anaesthesiologist /anaesthetist
- Medical doctors
- District Health Officer
- Physician Assistant Supervisor

The roles and responsibilities of this committee include:

- Investigate all maternal and newborn death in the Hospital
- Review all maternal and newborn deaths in the hospital within 48 hours of notification
- Devise and implement action points based on their findings
- Keep the filled review tool confidential and ensure it will not be used for any other purpose
- Conduct anonymous reviewing of cases to avoid blaming and bias
- Compiles and reports the findings to DHO every month.
- Conduct in-depth investigation of selected cases
- Provide technical support to health centre and clinic as needed
Health centers and clinics:

Composed of:

- Head of the facility
- District Reproductive health supervisor
- MCH supervisors
- Surveillance focal person
- Nursing director/directress or second screener in the clinic, and
- Skilled CHV supervisor.
- For deaths that occurred at home, two community representatives (e.g. district chairpersons, women group) will be added to the facility committee.

The facility head will chair the committee.

Roles and responsibilities of the health center/clinics committee:

- Assign the skilled CHVs supervisor to collect data (maternal and new born death notification form) for all deaths reported by CHVs irrespective of place of death
- Investigate all the maternal and new born deaths
- Conduct monthly meeting to review and produce summaries.
- Develop response actions and follow implementation
- Keep the filled review tool confidential and ensure it will not be used for any other purpose
- Conduct anonymous reviewing of cases to avoid blaming and bias
- Compiles and reports the findings to district health officer.

Community based MNDSR: It comprises of:

- CHV
- Representative from CHDC
- District chairperson
- Representative from women group
- Traditional healers
- Spiritual healers
- Town chief.
- District Health Officer
- Officer In charge of the facility

The head of Community Health Development Committee will chair the committee.

**Roles & responsibilities of community committee include:**

- Conduct immediate meeting to report and establish the cause of death
- Develop response actions and follow implementation
- Report to the Catchment health facility through the CHV’s supervisors / CM
- Give feedback to the general community and recommendations to prevent future death

**Availing tools and guidelines for MDSR**

The tools/guideline prepared by the Ministry of health and social welfare through FHD and DPC will be distributed to counties. The office of county health and social welfare team are responsible for producing and distributing the required quantities of tools to their health facilities.

**Legal and ethical considerations**

Local data collectors and committee members will be the only persons knowing the names of deceased and health care workers involved in the management of the case. The data collectors and committee members will have the right to access facility records of cases. The ministry of health will work with responsible bodies on establishing mechanisms that provide legal protection to reviewers and data from civil and professional liability.

Ethical issues will be considered when reviewing maternal and newborn deaths both at community and facility level. These include:

a. **Autonomy:** family and friends of the deceased will be well informed about the review process. Their voluntary participation will be sought for and the interview can be interrupted at their request.

b. **Privacy:** Families and health care workers directly and indirectly involved in the review process have to be reassured of their privacy. The identities of the deceased, family and health care providers involved in the management should be kept confidential and known only to those who are doing the actual review. All persons having access to identifiable information will sign a confidentiality agreement stating that they will not disclose any identifiable information. Data
collection forms, case summaries, review meeting minutes and reports or dissemination results will not contain any personal identifiers. All records of cases reviewed & any discussion will be kept secured; hard copy information will be kept in locked cabinets/offices and electronic data in password protected files.

c. **Beneficence:** Data obtained through the MNDSR should be tailored in a way that enables production of response actions at different levels.
Section 4

MNDSR communication/ information dissemination approach

Whom to inform of the results

The general principle is to get the key messages to those who can implement the findings and make a real difference towards saving mothers' and new born lives. They may include:

- Ministry of Health and social welfare
  Community, district, county and/or national health care planners, policy-makers and politicians
- Professional organizations and their members, including paediatricians, physicians, obstetricians, midwives, anaesthetists, pathologists, and public health professionals who are involved at each level
- Leaders in other health care systems, such as Social Security and the private sector
- Health promotion and education experts
- Public health or community health departments
- National maternal and new born review committee
- Academic institutions
- Local health care managers or supervisors
- Local governments
- International and national organizations
- Community members
- National or local advocacy groups
- media
- Representatives of specific faith or cultural institutions or other opinion leaders who can promote and facilitate beneficial changes in local customs
- All those who participated in the survey

The following methods can be used for dissemination of results: Awareness creation to the wider community will be the top priority to be accomplished and to promote ownership of the review process.
Community-based response will also focus on increasing awareness and sensitization and behaviour change strategies to include the use of the following channels:

**Community/facility level:**
- Team meetings
- Thematic seminars at facilities
- Community meetings (General)
- Radio programmes
- Printed reports
- Training programmes
- Posters
- Text messages
- Video clips
- Community peer meetings (women, men, youth groups)
- Town criers

**National and County Levels:**

Maternal and New born deaths information dissemination will involve the national health stakeholders; line Ministries; members of parliament, etc. The Minister of health and social welfare or Chief Medical Officer is the chief advocate of maternal and new born deaths in the country. They shall plan, coordinate and disseminate MND reports to stakeholders on bi-annual gathering.

The Maternal and New born deaths information dissemination will involve the county health stakeholders; line Ministries; members of parliament, etc. The County Superintendent/Development District/county or national level:

- Printed reports for policymakers
- Statistical publications
- Scientific articles
- Professional conferences
- Training programmes
- Media
- Press releases
- Websites
- Newsletters and bulletins
- Fact sheets
- Posters
- Video clips
- Intersectoral meetings
Publish the results

Publishing a report is one of the primary ways to disseminate the findings and recommendations. The report should be written in simple language, be easy to follow and should include some standard sections. The scope, depth and breadth of the report may vary, depending on the approach that was chosen and the number of cases reviewed.

- A single facility death review report may be an internal document, copied and distributed to all staff, relevant decision makers in the area, and colleagues outside the facility. The objective is to share the findings and recommendations. As it is likely that many people involved will know the identities of the deceased women’s family and staff involved in the care, it will be particularly important to focus on positive recommendations, rather than placing blame.

- Facilities-based review report may have broader audiences: all the facilities involved in the review, other facilities in the area (public and private), various decision makers, insurance companies and teaching institutions, as well as national authorities and the public.

- A community-based review may have a report that is distributed to leaders of the area of the review, individuals involved in community programs, and district or national health officials.

However, remedial action does not need to wait for the report to be published. Sometimes the findings of a single case review can reveal a significant problem that needs to be addressed immediately. The frequency and importance of other problems may only become apparent after the information from the qualitative review is quantitatively analysed.

Superintendent is the chief advocate of maternal and new born deaths in the country. He/She shall plan, coordinate with the County health teams to disseminate MND reports to stake holders quarterly during relevant fora: County Review meetings, CHSWB meetings, County development meetings, etc the county health social welfare bi-annual gathering.
Section 5

Identification, Reporting and Reviewing of maternal and new born deaths

Source of information

There are two major sources of information: Communities and facilities.

Community death:

The CHVs will establish a link with all possible sources of information for identifying the deceased. For identifying deaths of women of reproductive age and new born in a community, possible sources of information include:

- Religious leaders/institutions
- Health Development members
- Community leaders
- Administrative leaders
- The CHVs
- Traditional leaders
- Family members
- Community members

Once the health facility is notified, the following information should be received to facilitate investigation:

Notification information:

- Name
- Age
- Address
- pregnant or not
- Just deliver or not (2 months after delivery)
- Possible cause of death
- Place of death

Verbal autopsy source will include:

- Persons who primarily attended the woman and/or newborn during illness
- Persons who attended the woman in labour/delivery at home
- Persons who were present at the side of the woman and/or newborn at the time of death
- Partner
- Family member

Figure 4: Summary of community level identification, review, and reporting and response process

Identification of all deaths that occurred among women of reproductive age and new born by CHVs

Notification of identified deaths to the head of Health facility within 24-48 hours by key informant

Classification of notified deaths as suspected maternal or new born death by DHOs (a week of the death)

DHO conduct verbal autopsy for suspected maternal and newborn death and submits findings to HF head and CSO

The head of the HF will convene a review committee to discuss findings and take appropriate actions

Identification and reporting of maternal and new born deaths

Maternal and new born death reporting from the community will be done by CHVs. Ideally the CHVs will identify deaths of all women of reproductive age and newborns. S/he will report the death to the head of the health facility immediately or within 48hrs. The DHO will go to the community to investigate and determine whether the death was pregnancy related and send report to the county surveillance officer and the catchment health facility. Based on the findings, response can be initiated at reporting health facility team and DHO. CHT will provide further response support if required.

Facility death

The head of the maternity ward is responsible for notifying maternal and/or new born deaths to the head of the health facility/ medical director if hospital or health center

The sources of the information for facility deaths reviews include:

- Referral ledger/slips
- Medical records
- ANC ledger
- Labour and Delivery Ledger
- Post-Partum Ledger
- ER ledger
- OR ledger
- Attending health workers (OPD, maternity, OR)
- Others

**Identification and reporting of maternal and newborn deaths**

**Facilities**

The supervisor of the maternity wards will be responsible for recording and reporting maternal and newborn deaths within 24 hours. Any death of a woman of reproductive age should trigger a review of her medical record to assess whether there was any evidence the woman was pregnant or within 42 days of the end of a pregnancy. If there is such evidence, the supervisor of the ward has to report to the facility head within 24 hours of identifying deaths.

**Figure 3: Maternal death review at facility level**

- Notification of maternal and newborn deaths by the head of the maternity ward within 24 hours of death.
- The facility review committee investigate the deaths and submit report to the county
- The review committee with support from county team, initiate response action
Table 1 lists information that would be helpful in understanding why a woman and newborn died.

**Table 1: Maternal data to be collected**

| Demographic data | Age, marital status, education, occupations, home address, county, district, health insurance (if applicable), |
| Reproductive history (gravidity/parity/livebirths/stillbirths/spontaneous abortions/induced abortions/previous caesareans/previous complications); medical history; antenatal care (place, gestational age at onset, number of visits, complications (including date(s), signs and symptoms, diagnoses, procedures, treatments); hospitalizations (date[s], place, diagnoses, test results, procedures, treatments); |
| Delivery information | Pregnancy outcome and condition (undelivered, delivered-live birth, stillbirth, abortion, unviable/ectopic); method of delivery (D&C, vaginal delivery, assisted vaginal delivery, caesarean section (elective or emergent) medical treatment); onset of labour (place/day/time); gestational age at delivery; labour management (involved health staff, use of partograph, presentation, active management; complications (including date(s), signs and symptoms, diagnoses (examples include: abruption, hypertension, infection), procedures, treatments); postnatal events (including date(s), signs and symptoms, diagnoses (examples include infection, haemorrhage, preeclampsia, depression) procedures, treatments); referral information; |
| Information on death | Death (place/day/time); Physiological cause; categorical cause (direct, indirect, late, coincidental); Complications/illnesses (date/time of onset/signs and symptoms) whether treatment was sought (medical or traditional)/place, diagnoses, test results, procedures, treatments (medical or traditional); date and place of death. |
| Potentially avoidable factors | Was the family aware of warning signs that the mother had a problem? What was the family's attitude towards the health care system? Did they encounter any problems when seeking or obtaining care for the mother? Were there delays in referral? Were there problems at the health care facility (delay in getting attention, delay in diagnosis/treatment, lack of lab testing/medication/supplies, lack of trained staff and lack of respectful treatment)? Were there any barriers to obtaining care, such as geographic, financial, or social or other responsibilities? |
| Info on MNDR | Date of Review (s) |
### Table 2: New born data to be collected

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic data</strong></td>
<td>Age (days), parent home address, sex, age of the mother, mother’s name, occupation and education of parents.</td>
</tr>
<tr>
<td><strong>Prenatal history</strong></td>
<td>Mother’s antenatal care history (ever attended ANC during pregnancy, place, gestational age at onset, number of visits, complications (including date(s), signs and symptoms, diagnoses, procedures, treatments); hospitalizations (date[s], place, diagnoses, test results, procedures, treatments)</td>
</tr>
<tr>
<td><strong>Delivery information</strong></td>
<td>Onset of labour (place/day/time); place of delivery, skilled or non-skilled, delivery gestational age at delivery; labour management (involved health staff, use of patographs, presentation, active management; complications (including date(s), signs and symptoms, diagnoses (examples include: abruption, hypertension, infection), procedures, treatments); postnatal events (including date(s), signs and symptoms, diagnoses (examples include infection, haemorrhage, preeclampsia, depression) procedures, treatments); referral information; Newborn outcome and conditions (delivered-live birth, stillbirth,); method of delivery (vaginal delivery, assisted vaginal delivery, caesarean section (elective or emergent) medical treatment) APGAR score</td>
</tr>
<tr>
<td><strong>Information on death</strong></td>
<td>Place of death, date and time of death, place of delivery, skilled or non-skilled delivery, date and time of delivery, if home delivery, name of community and birth attendant, date and time of arrival if referred to the facility, mode of transport to the clinic (Transport vehicle, ambulance, hammock, wheelbarrow, walk, Others), distance covered in hours to the clinic; Date and time assessed by mid-level health professional upon arrival in the clinic: (within 1 hr, 2-12hrs, 12-24 hrs, After 24hrs), diagnosis made after assessment. Immunization history, new born care</td>
</tr>
<tr>
<td><strong>Potentially avoidable factors</strong></td>
<td>Was the family aware of warning signs that the newborn had a problem? What was the family's attitude towards the health care system? Did they encounter any problems when seeking or obtaining care for the newborn, were there delays in referral?, were there problems at the health care facility (delay in getting attention, delay in diagnosis/treatment, lack of lab testing/medication/supplies, lack of trained staff and lack of respectful treatment)?, were there any barriers to obtaining care, such as geographic, financial, or social or other responsibilities?</td>
</tr>
<tr>
<td><strong>Info on MNDR</strong></td>
<td>Date of Review (s)</td>
</tr>
</tbody>
</table>
**Review process**

The information provided for the review process should be anonymous, which is to say that the case information presented to the review committee should contain no identifying data regarding the patient, health care providers, or facilities. After data collection is complete, all data files and instruments should be made anonymous, although a key linking the case number to the identity of the mother can be kept in a locked storage space.

At the death review committee meeting, members may take turns reading the case summaries. After each case summary is read, the members then discuss the case, the events that may have led to the mother or newborn death. If any points are unclear, the reviewers will explain. The reporter should keep a list of the main points of the discussion. A checklist produced by the committee can be used to help ensure that the full range of possible problems is considered in the discussion.

The means of communicating findings of the review should follow three principles:

**The first principle:** There should always be a feedback of the findings and the recommendations at the level of the facility or the community where the information was collected

**Secondly:** Feedback should be in a de-identified form so that the individual families or health care providers cannot be identified.

**Finally:** Legal safeguards should be in place to prevent the use of the review findings in litigation.
The following general principles can help make the review process more effective and efficient:

- The problems leading to maternal and newborn death are frequently not all medical - think holistically.
- Focus only on those events that may have directly contributed to the maternal and newborn death throughout pregnancy and delivery, not everything that happened.
- Quality of care received by the mother and newborn should be compared both to accepted local practice as well as best medical practice.
- While most cases are unique, try to group problems into general categories (e.g., lack of transportation to health care facility) while keeping enough information so that a specific strategy can be developed (e.g., not "improve health care system").

Establish the cause of death

a. Establish the medical cause of death

The investigation should determine the medical or pathophysiologic cause of death as specifically as possible and categorize it as a direct obstetric, indirect obstetric or non-maternal death. Mechanisms for establishing the medical cause of death will depend on whether the woman or newborn was hospitalized or not.

Facility deaths: The medical cause of death can frequently be established from the medical records. Interviews of facility personnel involved in the care of the woman or newborn may provide additional information that can be used to corroborate facts in the facility record. This is particularly important in situations where there are questions on quality of care.

Deaths occurring outside the facility: In some cases, a woman and/or new born who dies outside the facility may have had antenatal or newborn care or been hospitalized prior to her death. Medical records may be helpful but are sometimes unavailable in these situations. Verbal autopsy is a tool that can be used to determine the medical cause of death.
b. Determine the non-medical causes of death

Non-medical causes of death are often more important in determining whether a woman lives or dies than the medical condition itself. It is important to investigate these in order to reduce maternal and newborn mortality. Major examples of non-medical causes of death include the timeliness of the problem recognition and decision making, access to care and logistics of the referral process (see figure 4 pathways to survival).

Figure 4 Pathway to survival

i. Timeliness of problem recognition and decision making:
   - Was the problem recognized promptly? If not, why not? Did the death occur so suddenly that the woman and/or newborn could not receive any care? Were any risk factors present that may have been missed because the woman and/or newborn did not seek health care or because health care was inadequate?
   - If the problem was recognized, was the decision made to seek care? If not, why not? Again, did the death occur too suddenly? Did the woman refuse to seek care? Were there family obstacles to a referral? Was concern over access to care an obstacle to decision making?
   - Did any beliefs or cultural practices create barriers to obtaining appropriate medical care? Did previous poor experiences with the health care system make the patient reluctant to seek care or CHVs reluctant to seek help/support?

ii. Access to care/logistics of referral:
   - Was geography a factor? Were there problems with transportation? Or with the roads? Did the woman live far away from the necessary health care services?
• Were financial factors obstacles to obtaining care? Were actual costs a deterrent to the woman or her family? Did the health care delivery provider refuse appropriate care because the patient could not pay, or for cultural reasons?
• Were there delays in transferring the patient to an appropriate level of care, such as from a clinic to a hospital? Was there a delay in her receiving care at the institution?

iii. Assess the quality of medical care:
• The investigation should include information about the medical management of the woman and/or newborn condition in order for the committee to determine if the recommendations and treatment were appropriate and the quality of care was adequate.
• The quality of any healthcare such as screening for risk factors or underlying conditions also needs to be assessed. For both facility and out of facility deaths the quality of care evaluation should include that care given by traditional birth attendants, nurses, midwives and physicians.

Determination of preventability

The purpose of every death investigation is to determine the causes of death, whether the death was preventable and if so, how it could have been prevented. The aim of this investigation is not to blame a particular person or facility for the death. Rather preventability is a pro-active concept in which lessons are learned and applied to prevent future deaths from similar factors. The following factors should be considered when assessing if a death was preventable:

a. Family/community level

Patient/family factors– did the woman and her family
• Recognize that a problem existed
• Seek medical care
• Seek prenatal care
• Comply with any medical advice given

Delivery attendant factors – did the Delivery attendant
• Manage the labour and delivery correctly
• Recognize that a problem existed
• Refer the woman and/or newborn appropriately and without delay
• Consider herself part of the local health care system
b. Formal health care delivery-system level

Antenatal care – Determine whether

- The woman received antenatal care
- Antenatal care followed country guidelines
- Risk factors and medical problems were correctly assessed and treated
- Patient received education on danger signs.

Health facility factors – determine whether:

- Essential obstetric functions were available at the first referral level
- Resources were adequate to resolve the problem
- Protocols/norms were available and appropriate
- Care was available regardless of the ability to pay

Health care provider factors – determine whether the health personnel:

- Were trained to treat the problem correctly. If so, treated the problem adequately?
- Were sensitive to the social and cultural values of the patient and her family

c. Intersectoral level

Transportation factors – assess if transfer was hindered by:

- Availability of transport
- Adequacy of transport
- Ability to travel at night
- Accessibility
- Road network
- Cost
- Education factors
- Communication factors
- Status of woman and/or newborn

Based on information obtained from the investigation the committee will make recommendations to prevent such deaths in the future. As cases accumulate and patterns emerge, especially at the county and national levels, interventions can be priorities according to which will have the greatest impact.

Case review need to be linked to a response – Every case review should include a recommendation to prevent future deaths.
### Key messages: A guide to categorizing contributory factors

<table>
<thead>
<tr>
<th>Non-medical problems</th>
<th>Medical / service problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of awareness of danger signs of illness</td>
<td>No health service available or too far away</td>
</tr>
<tr>
<td>Delay in seeking care due to lack of family agreement</td>
<td>Sought care but no staff were available</td>
</tr>
<tr>
<td>Geographic isolation</td>
<td>Medicine not available at the facility and must be provided by the family</td>
</tr>
<tr>
<td>Lack of transportation or money to pay for it</td>
<td>Health care provider would not see woman and or newborn without payment</td>
</tr>
<tr>
<td>Other responsibilities</td>
<td>Woman was not treated immediately after arriving at the facility</td>
</tr>
<tr>
<td>Cultural barriers, such as prohibitions on mother leaving house</td>
<td>Health facility lacked needed supplies or equipment</td>
</tr>
<tr>
<td>Lack of money to pay for care</td>
<td>Staff did not have knowledge/skills to diagnose and treat mother and newborn</td>
</tr>
<tr>
<td>Belief in use of traditional remedies</td>
<td>Had to wait many hours for qualified staff to see mother and newborn</td>
</tr>
<tr>
<td>Belief in fate controlling outcome</td>
<td>No transport available to reach referral facility</td>
</tr>
<tr>
<td>Religious belief</td>
<td></td>
</tr>
<tr>
<td>Dislike of or bad experiences with health care system</td>
<td>Poor staff attitude</td>
</tr>
</tbody>
</table>
Analysis (Aggregation of multiple case review) - perspective on national, county, District level.

The purpose of all the data collection and analysis is to have the information on which to act, to understand the problems that led to the deaths and use that knowledge to develop appropriate interventions. Data analysis is critical to provide useful information to guide action. It is important to analyse data in a thoughtful way, maintaining the focus on identifying problems in the system that may contribute to maternal and newborn deaths, especially those that could have been prevented or avoided.

When collecting data for a maternal and newborn death review, it is important to have an analytic plan to guide the process and identify problems in the system that may contribute to maternal and newborn deaths, especially those that are amenable to change. Analysis will have different functions and corresponding responses when done for the facility level, compared to analysis done for the district, county and national levels.

The best approach would be a combination of both qualitative and quantitative analysis. Qualitative and quantitative analysis provide different insights into the causes of maternal and newborn deaths, and a combination of the two, provides more information than either can alone. Qualitative analysis of each case, done as part of the Maternal and newborn Death Review process, identifies the medical and non-medical problems that contributed to that death. Grouping the findings, especially the problems, and looking at them quantitatively provides information on which problems are most common. The use of qualitative and quantitative analysis together allows one to both understand what the problems are and prioritize the actions to remediate them.
Analysis of data depends on the level of health service delivery:

9.1 District level analysis- the district based analysis should be done quarterly which entails a detailed analysis on:

1.1. Background information of the deceased including :-

Maternal

- Age
- Residential address
- Marital status
- Education
- Occupation
- Income
- Ethnicity
- Religion
- Parity
- ANC
- Mother immunization status
- Place of death (home, facility)
- Timing of death in relation to pregnancy (Ante partum, intra partum, postpartum)
- Foetal outcome (abortion, ectopic, live birth, still birth, neonatal death)

Newborn

- Age
- Sex
- Address
- Mother’s occupation
- Place of delivery
- Time of delivery
- Birth attendant
- Father’s occupation
- Mother’s education
- Father’s education
- Immunization status
- Place of death (home, facility)

9.2 Cause of Death

A. Maternal

- Direct obstetric (haemorrhage, obstructed labor, HDP, unsafe abortion, sepsis)
- Indirect obstetric (anaemia, malaria, HIV, TB, etc.)
B. Newborn

- Birth asphyxia
- Complications from pre term birth
- Neonatal sepsis
- Pneumonia
- Others

1.2. Contributory factors

- Health seeking (delay one)
- Transport access (road, vehicle, communication)
- Transport cost
- Health system related (human resource, supplies, equipment, service cost, etc.)

1.3. Status of implementation of the proposed action plan

2. County level analysis - the county based analysis should be done quarterly. This entails analysis on

2.1. Background information of the deceased including:

2.2. A. Maternal

- Age
- Residential address (urban/ rural)
- Marital status (married, single, cohabit ate, divorce, separated widow)
- Education (never gone to school, elementary, junior high, senior high, higher education)
- Parity
- ANC (booked, un booked)
- Place of death (home, facility)
- Timing of death in relation to pregnancy (Ante partum, intra partum, postpartum)

B. Newborn

- Residential address (urban/ rural)
- Age (days)
- Sex
- Address
- Mother occupation
• Father occupation
• Mother education
• Father education
• Immunization status
• Place of delivery
  o Facility delivery
  o Home delivery
• Birth attendants

Cause of Death

2.3. A. Maternal
• Direct obstetric (haemorrhage, obstructed labor, HDP, unsafe abortion, sepsis)
• Indirect obstetric (anaemia, malaria, HIV, TB, etc )

2.3. B. Newborn
• Birth asphyxia
• Complications from pre term birth
• Neonatal sepsis
• Pneumonia
• Others

2.4. Contributory factors
• Health seeking (delay one)
• Transport access (road, vehicle, communication)
• Transport cost
• Health system related (human resource, supplies, equipment, service cost, etc.)

2.5. MMR and NMR

3. National level analysis: the national analysis should be done quarterly. This entails analysis on

3.1. Background information of the deceased including :-

3.2. A. Maternal
• Age
• Residential address (urban/ rural)
• Marital status (married, single, cohabitate , divorce , separated widow)
• Education (never gone to school, elementary, junior high, senior high, higher education)
• Parity
• ANC (booked, unbooked)
• Place of death (home, facility)
• Timing of death in relation to pregnancy (Ante partum, intra partum, postpartum)

3.2. B. Newborn

• Age
• Sex
• Address
• Mother occupation
• Father occupation
• Mother education
• Father education
• Immunization status
• Place of delivery
  o Facility delivery
  o Home delivery
• Birth attendants
• Time of delivery
• Place of death

Cause of Death

Maternal

• Direct obstetric (haemorrhage, obstructed labour, HDP, unsafe abortion, sepsis)
• Indirect obstetric (anaemia, malaria, HIV, TB, etc.)

New born

• Birth asphyxia
• Complications from pre term birth
- Neonatal sepsis
- Pneumonia
- Others

3.3. Contributory factors
- Health seeking (delay one)
- Transport access (road, vehicle, communication)
- Transport cost
- Health system related (human resource, supplies, equipment, service cost, etc.)

3.4. MMR and NMR

Dissemination of results

The information needs to be disseminated using a variety of channels to enable a wide range of people to access it, to ensure that the information gets to the right audience, namely those who can act on the recommendations. If specific causes of deaths are identified as particularly problematic, conferences, seminars, and in-service discussion can be held to educate health staff.

Response

Taking action to prevent maternal and new deaths is the primary objective of MNDSR. In most reviews, multiple problems will be identified, and a number of potential actions will be recommended. The type of action taken will depend on whether decisions are being made at the national, county, district, facility and community level that was responsible for the investigation, stakeholders involved, and the findings of the analysis.

Possible actions include interventions in the community, within health services, and in the public sector. Findings from the community may point to the need for the development of health promotion and education programmes, facilitation of financial access as well as possible changes in community service provision, changing home practices or in the practices or attitudes of the health care facilities, or improved infrastructure such as roads, bridges, and communication technology.

Information from facilities may point to the need for changes in clinical practice or modification of service provision. The needed actions may be in the area of direct patient care, or at the system level, such as how to provide the necessary drugs and personnel at a health care facility or perhaps the need for clinical guidelines for care or capacity building.
Information from the findings of combined data analysis can cover all these issues on a far wider basis and are used at institutional, community, district, county and national levels by politicians, health service planners, professionals, public health personnel, educators and women’s advocacy groups. They may also lead to the development of programs to improve maternal and newborn health.

Suggested standard sections for a MNDSR report

1. Socio demographic
   a) Background of area covered by review.
   b) Characteristics of women of reproductive age in area.
   c) Characteristics of births in area (number, live or stillbirth (fresh vs. macerated), birth weight, gestational age).

2. Causes
   a) Maternal (direct and indirect) and/or newborn deaths by area, mothers and/or newborn age, ethnicity (with denominator if possible).
   b) Maternal and/or newborn deaths by medical cause.

3. Results and discussions
   a) Problems leading to death by medical cause and non-medical cause and their frequencies. (qualitative and quantitative)

4. Recommendation
   A. Status of implementation of previous recommendations (whether they were implemented or not if not why)
   B. Recommendations to prevent future deaths

5. Action Plan
Section 6

Monitoring and Evaluation

Framework for monitoring

Monitoring and evaluation of the MNDSR system itself should be in place to ensure that the major steps in the system are functioning adequately and improving with time. It is also important to assess the timeliness of the information and the coverage of the system. Monitoring of the MNDSR system is carried out both at national and county level. The monitoring framework with indicators is shown in table xxx.

Table xxx. Monitoring framework

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Target</th>
<th>Means of verification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall system indicators</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Maternal and new born death notifiable</td>
<td>100%</td>
<td>Weekly bulletin/HMIS</td>
</tr>
<tr>
<td># of National maternal and new born death surveillance response review committee meetings held</td>
<td>4</td>
<td>Minutes &amp; Report</td>
</tr>
<tr>
<td>National maternal mortality report published annually</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>% of facilities with maternal death review committees</td>
<td>100%</td>
<td>Yes</td>
</tr>
<tr>
<td>% of district/counties with someone responsible for MDSR</td>
<td>100%</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Identification and reporting

**Facility:**
- All maternal deaths are reported: Yes (Survey)
  - % within 48 hours: >90% (Survey)

**Community:**
- % of district with reporting weekly including zero reporting: 100% (Weekly bulletin/MNDSR report)
- % of community maternal deaths reported within 48 hours: >80% (Survey)

### Review

**Facility**
- % of facilities with a review committee: 100% (Report)
- % of facility maternal deaths reviewed: 100% (MDSR report)

**Community**
- % of verbal autopsies conducted for pregnancy related deaths: 100% (Survey)

### Data Quality Indicators – TBD

- Cross check data from facility and community on same maternal death (Survey)
- Sample of deaths to ensure they are correctly identified as not maternal (Survey)

### Response

**Facility**
- % of committee recommendations that are implemented: 80% (Survey)
  - quality of care recommendations
  - other recommendations

**Community**
- % of committee recommendations that are implemented: 80% (Survey)
### Evaluation of the MNDSR system

In addition to the monitoring indicators that provide a quick snapshot of whether the system is improving, periodically a more detailed evaluation is useful particularly if i) the indicators demonstrate that one or more of the steps in the MNDSR process is not reaching expected targets, or ii) if maternal and newborn mortality is not decreasing. A more detailed evaluation of the system will be conducted every 2 years using relevant methods.

### References


15. Hussein J. Improving the use of confidential enquiries into maternal deaths in developing countries. Bulletin of the World Health Organization. 2007;85:


Annex 1: HEALTH FACILITY MATERNAL DEATH NOTIFICATION FORM

1. Name of the deceased: ____________________________________________
2. Name and cell phone number of immediate contact: ____________________
3. Household address: district community ________ Town/village ____________
   house number if applicable: __________
4. Date of the women death: ________________________________
5. Who informed the death of the woman?
   1. TBA/TTM
   2. Religious leader
   3. gCHV
   4. Family member or relative
   5. Others (specify) __________________________
6. Date of Notification: ________________________________
7. Name and contact of the HF Staff __________________________

Annex 2: MATERNAL DEATH REVIEW AND REPORTING FORM FOR HOSPITAL
NB: This review form is strictly confidential. It should be completed within 24-48hrs for every maternal death by the Maternal & Newborn Death review Committee at the hospital.

NAME OF HOSPITAL: _________________________________________
COUNTY: _________________________ MONTH __________ YEAR: __________

Name of Deceased: _______________________________
Age: ______________
Home Address: _______________________________

Educational Status:
Never gone to school _____
Elementary: _____
Junior high: _____
Senior high: _____
Higher education_____

Occupation of Deceased: _______________________________

Gravidity: ____________ Parity: __________

Gestational age in months or weeks: ______________

Attended Antenatal care during this pregnancy? YES NO
If yes, number of ANC visits completed? _______

Risk factor detected at ANC if any; _______________________________

Treatment given at ANC for risk factor if any: _______________________________

Place of Death: ____________________________

Neonatal Outcome: Live Died

Referred from another HF: YES NO Name of HF: _______________________________
If yes, reason for referral: _______________________________
Date and time of referral: _____________________________

Date and Time of arrival: _________________________________

Date and time of admission: ______________________________

Mode of transport to the health facility: Transport vehicle, Ambulance, Hammock, Wheelbarrow, Walk, Others

Distance covered in hours to the health facility: ________________

Date and time assessed by mid-level health professional upon arrival in the health facility: _______________________

Within 1 hr  2-12hrs  12-24 hrs After 24hrs

Was a doctor called or informed to see the patient?  YES  NO

Did the doctor come to see the patient?  YES  NO

Date and time seen by the doctor. ______________________________

How long did it take for the doctor to see the patient after he/she was informed?

Within 1 hr  2-12hrs  12-24 hrs After 24hrs

If no, why? ____________________________________________

Initial Examination findings: BP ___________  P>__R: _____________  Temp: ____________

Initial Laboratory findings: Hemoglobin __________  Urine protein: ________  Urine sugar: FHT___________

Diagnosis made upon arrival: ___________________________________

Interventions at the hospital:

Medical: YES  NO

Type: ____________________________________________________________________________

Surgical: YES  NO

Type: _____________________________________________________________________________

Date and Time of Death: _________________________________
Detailed narrative events leading to death:

_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Summary of contributory factors to death:

_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Possible cause(s) of death: ____________________________________

Name of Attending Physician: _______________________________________________

Recommendations and actions to be taken by the Audit Committee:

_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Signature of Committee Chairperson: _____________________________________________

Date: _____________________________________

NAME AND CONTACT OF MATERNAL & NEWBORN DEATH REVIEW COMMITTEE MEMBERS
CONDUCTING THIS REVIEW:

Names of members of the Review Team

1. 
2. 
3. 
4. 
5. 
6.
Annex 3: MATERNAL DEATH REVIEW AND REPORTING FORM
FOR CLINIC/HEALTH CENTER
MINISTRY OF HEALTH & SOCIAL WELFARE
REPUBLIC OF LIBERIA

NB: This review form is strictly confidential. It should be completed within 24-48hrs for every maternal death by the Maternal & Newborn Death Review Committee at the health center and clinics.

NAME OF HEALTH FACILITY/COMMUNITY: _______________________________________
COUNTY: ___________________________ MONTH ______________ YEAR: _______________

Name of Deceased: _________________________________
Age: ______________
Home Address: _______________________________
Educational Status:
  Never gone to school ______
  Elementary: ______
  Junior high: ______
  Senior high: ______
  Higher education_______
Gravidity: ____________  Parity: __________
Gestational age in months or weeks: ______________
Antenatal care during this pregnancy? YES  NO
If yes, number of ANC visits completed? ______
Risk factor detected at ANC if any; ________________________________________
Treatment given at ANC for risk factor if any: _________________________________________
Occupation of Deceased: ________________________________________
Place of Death: ____________________________
Neonatal Outcome: Live  Died

Brought from Community: YES  NO  Name of Community:
_______________________________________
If yes, reason for visit: ____________________________________________________________

Date and Time of arrival: _________________________________
Date and time of admission: _______________________________

Mode of transport to the health facility: Transport vehicle, Ambulance, Hammock, Wheelbarrow, Walk, Others
Distance covered in hours to the health facility; ________________

Date and time assessed by mid-level health professional upon arrival in the health facility: ________________

Within 1 hr  2-12hrs  12-24 hrs  After 24hrs
Initial Examination findings:  BP ___________  PR: _____________  Temp: ____________

Diagnosis made upon arrival: ___________________________________

**Interventions at the clinic/community:**

a. __________________________________________________________________________
b. ____________________________________________________________________________
c. ____________________________________________________________________________
d. ____________________________________________________________________________

Date and Time of Death: ________________________________

Detailed narrative events leading to death:
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Summary of contributory factors to death:
_____________________________________________________________________________________


Possible cause(s) of death: ____________________________________________

Name of OIC/Certified Midwife: ____________________________________________

Recommendations and actions to be taken by the health facility/community:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Signature of OIC/Certified Midwife: _________________________________________

Date: ____________________________

NAME AND CONTACT OF MATERNAL & NEWBORN DEATH REVIEW COMMITTEE MEMBERS CONDUCTING THIS REVIEW:

1. 
2. 
3. 
4. 
5. 
6.
ANNEX 4: MATERNAL DEATH / VERBL AUTOPSY AND REPORTING FORM FOR COMMUNITY
MINISTRY OF HEALTH & SOCIAL WELFARE

REPUBLIC OF LIBERIA

NB: This review form is strictly confidential. It should be completed by the Maternal & Newborn Death Review Committee within 24-48hrs for every maternal death that occurs in the community. The form should be filled by DHO.

NAME OF COMMUNITY: _________________________________________
COUNTY: ___________________________ MONTH ______________ YEAR: _______________

Source of information i) partners ii) relatives iii) CHVs iv) others
____________specify

Name of the woman (Dead): _________________________________________
Age: ______________
Home Address: _______________________________
Occupation of Deceased: ________________________________________
Marital status: Married_____ Single: ____ cohabitate ____ divorce ____ separated ____ widow ______
Nationality: ____________________________

Educational Status:
Never gone to school ______
Elementary: _____
Junior high: ______
Senior high: ______
Higher education_______
Number of pregnancy: ____________ Number of deliveries: __________

Did she attend clinic during this pregnancy? YES __ NO __
If yes, number of clinic visits completed? _________

What happened to the woman while she was pregnant:
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

What did the community/family/relatives do?

a. _________________________________________________________________________________

b. _________________________________________________________________________________
c. _________________________________________________________________________________
d. _________________________________________________________________________________

What happened when the woman went to deliver and after she delivered?
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Place of Death: ____________________________

Date and Time of Death: _________________________

Condition of baby: Alive ___ Dead ___

What do you think the woman really die from? ____________________________________

Recommendations and actions to be taken by the community:
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Name and signature:
_________________________  __________________________
DHO: name Signature

Representative of the Town (Preferably town chief) witnessed: Name_________________________
Signature___________________________

Date of review: ________________________________
For Review Committee only:

Confirm Cause of Death

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Responsible person and timeline</th>
</tr>
</thead>
</table>

NAME AND CONTACT OF MATERNAL & NEWBORN DEATH REVIEW COMMITTEE MEMBERS CONDUCTING THIS REVIEW:

1. 
2. 
3. 
4. 
5. 
4
Roles and responsibilities of key actors

County Reproductive Health Supervisor

- Take part in the County monthly maternal and new born death review meetings
- Receive and compile Monthly MNDSR reports from DRHS or DHO
- Recommend proposed action points from DRHS for implementation
- Submit monthly report to Central
- Liaise with DHO/DRHS to facilitate the County review of selected cases

District Reproductive Health Supervisor

- Takes part in the monthly meetings of maternal death review at health facilities.
- Compiles the monthly MNDSR reports from facilities
- Proposes action points & follows their implementation
- Submits monthly reports to the county
- Facilitate the county review of selected cases

4.2. Medical director of hospital / health center and clinic OIC

The health facility head will:

- Chairs the review committee
- Receive death notification from the CHVs
- Assigns a CHVs supervisor to conduct screening and verbal autopsy
- Keep all filled screening forms (whether the death is identified as maternal or not )
- Receives and keeps the filled death notification from the wards
- Collects relevant medical records and ready for review.

4.3. CHVs supervisors

- Screens and identifies maternal deaths from reported/ notified deaths women of reproductive age
- Submits all filled screening forms to the facility OIC (whether the death is identified as maternal or not )
• Conducts verbal autopsy in all suspected maternal deaths within one week of death
• Submits filled verbal autopsy timely to the OIC
• Participates in the Health Facility maternal and newborn death review committee meetings

4.4. Community Health Volunteers:

• Fill the notification form for all deaths of women in the reproductive age group
• Submit the filled notification form to the OIC within 24hrs- 48hrs of death. Keep a copy of the notification form at facility level.
• Assist their supervisor in conducting the verbal autopsy
• Attend the meeting of the facility review committee when it discusses the death at the respective.
• Follow implementation of action plans at community level

4.5. M&E officers at County level

• Reviews data from the county surveillance officer
• Analyse the data,
• Prepare report and disseminate to relevant bodies
• Submit report to the County MNDSR committee

4.6 Surveillance officer

• Collect and verify maternal and newborn deaths data from the community and the facility level
• Send to the next level:
  • Community to facility
  • Facility to district
  • District to county
  • County to national

Give feedback