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Maternal and Perinatal Death Surveillance and Response: Materials to Support Implementation

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Contents

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Abbreviations

ANC ..... Antenatal care

CLAP/WR ..... Latin American Center for Perinatology/Women's and Reproductive Health Unit

CL ..... Community Liaison

CDC ..... Centers for Disease Control and Prevention

CRVS ..... Civil Registration and Vital Statistics

DHIS2 ..... District Health Information System

HMIS ..... Health Management Information System

ICD-MM ..... The WHO application of ICD-10 to maternal deaths during pregnancy, childbirth and puerperium

ICD-PM ..... The WHO application of ICD-10 to deaths during the perinatal period

ICD ..... International Classification of Diseases

KMC ..... Kangaroo mother care

MCSP ..... Maternal and Child Survival Program

MCA ..... Department of Maternal, Newborn, Child, Adolescent Health & Ageing

MDR ..... Maternal death review

MDSR ..... Maternal death surveillance and response

MPDSR ..... Maternal and perinatal death surveillance and response

MMR ..... Maternal mortality ratio

MoH ..... Ministry of Health

PDR ..... Perinatal death review

PNC ..... Postnatal care

QI ..... Quality improvement

UNFPA ..... United Nations Population Fund

UNICEF ..... United Nations Children's Fund

WHO ..... World Health Organization

WRA ..... Women of reproductive age

Introduction to WHO Implementation Tools for Maternal and Perinatal Death Surveillance and Response

The purpose of these implementation tools is to provide a roadmap for conducting Maternal and Perinatal Death Surveillance and Response (MPDSR) in clinical and policy settings, as described in the two World Health Organization (WHO) guides entitled *Maternal death surveillance and response (MDSR): technical guidance information for action to prevent maternal death* (2013) and *Making every baby count: audit and review of stillbirths and neonatal deaths* (2016).

These two guides provide approaches to respond to maternal and perinatal death cases to help end preventable maternal deaths, stillbirths and newborn deaths. Bringing the death review process together has the potential to promote successful partnerships at different levels that can lead to real change for communities and nations.

MPDSR involves qualitative, in-depth investigations of the causes and circumstances surrounding maternal and perinatal deaths. This process is an integral part of quality of care improvement efforts to reduce maternal deaths, as well as preventable stillbirths and neonatal deaths.

The MPDSR process relies on the effective identification of reporting and assigning causes of deaths, identifying actions that may contribute to the prevention of further deaths, assigning those actions to particular groups or individuals, designating time frames for completion of those actions, and following up to ensure that those actions have been taken.

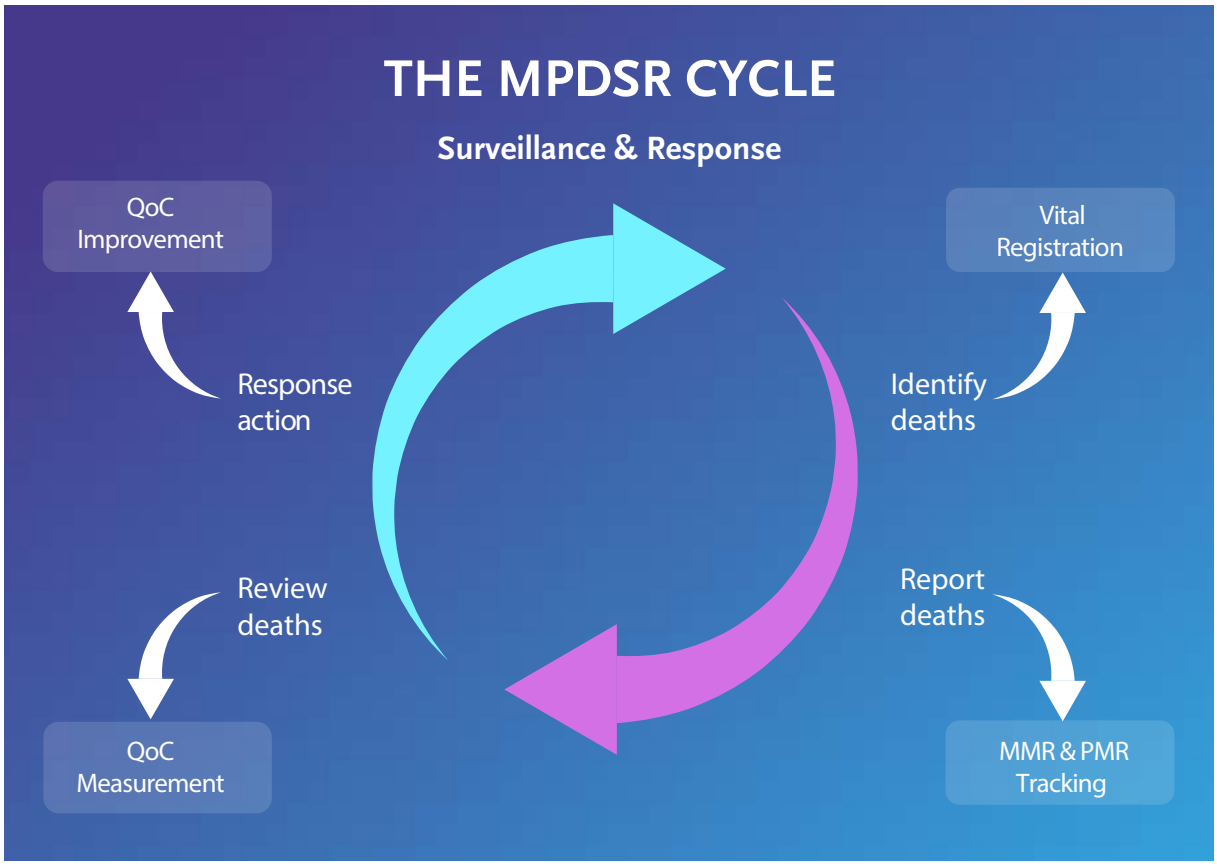
Some readers may be familiar with the term "audit" when applied to deaths and mortality in the context of MPDSR, while others are more familiar with the term "review". In these implementation tools, both terms are used interchangeably.

These MPDSR implementation tools are primarily focused on getting started at the district and health facility level as a first step. Surveillance, identification, notification and review of community-based deaths are important components of MPDSR and may involve a separate, but linked set processes.

What are the goals of the MPDSR process and this guide?

- To establish a framework to assess the burden of maternal deaths, stillbirths and neonatal deaths, including trends in numbers and causes of death.
- To generate information about modifiable factors contributing to preventable death, and to use the information to guide action in order to prevent similar deaths in the future.
- To promote confidentiality and a "blame free" culture
- To provide accountability for results and compel decision-makers to give the problem of maternal deaths, stillbirths and neonatal deaths due attention and response.
- To provide examples of forms and guidance that can be adapted to the local context.
- To compile and link to tools, resources and the evidence base for MPDSR.

Fig. 1. The MPDSR cycle



Who is this guide meant for?

This operational guide has a broad target audience, which may include:

- clinicians and all participants in clinical care for women and babies, and the maternal and perinatal death review processes;
- public health officials and public health leadership;
- other stakeholders in maternal and perinatal death reduction, such as planners and managers, in-service trainers, epidemiologists, demographers, policy-makers and professionals working with vital registration systems.

How are maternal and perinatal death review linked?

In some countries, maternal and perinatal death review processes are already linked at regional or national level, as well as in health facilities. In others, either maternal or perinatal death reviews may be taking place, or both are taking place, but they exist as separate entities. This guide is available for facility-level quality improvement teams, clinical leaders, health decision-makers and other stakeholders seeking to combine and strengthen efforts in order to learn from each other and reduce duplicate processes. Such efforts could include, for example, combined maternal and perinatal death review meetings within a single quality improvement committee, joint strategies to identify deaths, collect information and report data, or sharing meeting minutes and relevant action items between committees.

Outline of modules

There are ten modules in this operational guide that detail the process for maternal and perinatal death reviews. Each module links to available tools and resources, including: guidelines, forms, training materials, videos, training presentations and case studies. These materials can be adapted for various settings. Each available resource is mentioned at the end of each module. The majority of tools and resources in this document relate to maternal and perinatal deaths at the facility level and community level. Text boxes throughout the document provide illustrative examples in different contexts and additional resources can be found in Module 7. Please note that tools included in this document are in bold font while links to existing resources are underlined with hyperlinks to the document.

	MODULE TITLE	TRAINING MATERIALS (Maternal)	TRAINING MATERIALS (Perinatal)	CASE STUDIES	SAMPLE FORMS	OTHER TOOLS AND RESOURCES
1.	Definitions	✓	✓			✓
2.	Getting started at the facility level	✓	✓		✓	✓
3.	Identifying cases	✓	✓		✓	✓
4.	Collecting information	✓	✓	✓	✓	✓
5.	Conducting joint maternal and perinatal death reviews			✓	✓	✓
6.	Analysing and presenting information	✓	✓	✓	✓	✓
7.	Recommending actions and implementing change	✓	✓	✓	✓	✓
8.	Monitoring, evaluating and refining	✓	✓			✓
9.	Humanitarian and fragile settings					✓
10.	Overcoming the blame culture of MPDSR					✓

MODULE 1
Definitions

Module 1: Definitions

Inconsistent use of terminology contributes to confusion around maternal mortality, neonatal deaths and stillbirths. The following definitions cover some of the key terms adopted in the *MDSR technical guidance* and *Making every baby count* guides that are used in mortality audits. Please note the difference in definitions for pregnancy-related deaths and maternal deaths. For MDSR, we use the maternal deaths.

Pregnancy-related death

Pregnancy-related death: definition

The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death (obstetric and non-obstetric); this definition includes unintentional/accidental and incidental causes. *Standards and reporting requirements related for maternal mortality. In: ICD-11 Reference guide, Part 2 [website]. Geneva: World Health Organization; 2019*, accessed 12 July 2019).

Maternal death

Maternal death: definition

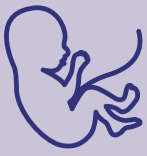
The death of a woman while pregnant or within 42 days of the termination of pregnancy irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Maternal death: presentation of data

Maternal mortality is presented as a ratio per 100 000 live births in a given time period.

Maternal causes of death

Cause of death coding is conducted according to the International Classification of Diseases–10th revision (ICD-10). WHO has developed guidance specific to maternal mortality, called *The WHO application of ICD-10 to maternal deaths during pregnancy, childbirth and puerperium: ICD-MM*. ICD-MM is intended to facilitate the consistent collection, analysis and interpretation of information on maternal deaths. The ICD-MM document will be updated based on ICD-11.



Stillbirth

Stillbirth: definition

The internationally comparable definition of stillbirth as defined by WHO is death before birth, among fetuses that are, by order of priority, of at least 1000 g birthweight, and/or at least 28 weeks gestation, and at least 35 cm long.[1] Because of the increased viability of babies born with lower gestational age in some parts of the world, and due to differences in capacity in measurement, some groups and individuals define stillbirths differently. For example, they may include fetuses of a lower gestational age. The national definition should be used, where relevant, and all stillbirths at 22 weeks and 28 weeks should be reported for international comparisons.

[1] See Figure 2.1 in *Making every baby count: audit and review of stillbirths and neonatal deaths* (2016).

Stillbirth: presentation of data

Stillbirths can be grouped into two major categories: (i) antepartum stillbirths, which occur before the onset of labour, and (ii) intrapartum stillbirths, which occur after the onset of labour. For intrapartum stillbirth diagnosis, it is a prerequisite to have heard fetal heart sounds on admission. Intrapartum stillbirths largely reflect the quality of care during labour, while antepartum stillbirths can be a useful indicator of the quality of antenatal care services and fetal growth monitoring in some settings, especially in low- and middle-income contexts. Assigning cause of death to stillbirths is very difficult, even in high- income settings with strong diagnostic capabilities. The timing of death is therefore a proxy, but should not be used to assign a cause of death. About one-half of all stillbirths worldwide occur in the intrapartum period, though the proportion can vary by level of access to care.

In areas where no fetal heart monitoring is available, stillbirths may be categorized as (i) "macerated" stillbirths or (ii) "fresh" stillbirths. Examination of fetal remains can assist in determining whether the fetus died more than 12 hours prior to childbirth (macerated stillbirth) or less than 12 hours before (fresh), though there is some potential for misclassification between these categories. For example, in settings with major delays in access to care, stillbirths may occur during labour, but not be delivered for days, by which time they are classified as macerated. Conversely, some intrapartum stillbirths may be due to infections or congenital causes. The extent of this misclassification may be important to consider in perinatal death review, depending on the context.

The stillbirth rate is defined as the number of stillborn babies per 1000 total births (total meaning both live and stillborn babies).

Neonatal death

Neonatal death: definition

Death after birth and within the first 28 days of life.

Neonatal death: presentation of data

The "early neonatal period" refers to the first seven days after birth (Days 1 through 7 after birth). The "late neonatal period" refers to the remainder of that first month of life (Days 8 through 28 after birth). In this document, Day 1 is considered in clinical terms to be the first day of life, but is defined differently in research settings.

Neonatal mortality is expressed as a rate per 1000 live births.

Perinatal mortality

Perinatal mortality: definition

The number of fetal deaths of at least 28 weeks of gestation and/or 1000 g in weight *and* newborn deaths (up to and including the first seven days after birth).

Perinatal mortality: presentation of data

Perinatal mortality is presented as a rate per 1000 total births (i.e. including stillbirths and live births).

Stillbirth and neonatal causes of death

Stillbirth and neonatal causes of death

Cause of death coding is conducted according to the International Classification of Diseases-10th revision (ICD-10). WHO has developed new guidance specific to perinatal mortality, called *The WHO application of ICD-10 to deaths during the perinatal period: ICD-PM*. ICD-PM is a globally applicable system for classifying perinatal mortality that overcomes the barriers posed by numerous existing classification systems, which have used different approaches and restricted data comparability. *Making every baby count* uses ICD-PM for classification in order to allow programmatic groupings of cases, and for comparison across low-income, middle-income and high-income settings with differing diagnostic capabilities.The ICD-PM document will be updated based on ICD-11.

Modifiable factors

A modifiable factor is something that may have prevented the death if a different course of action had been taken.

For example, a delay in administering oxytocin (uterotonic), or not having blood products available, could be a contributing or modifiable factor in a maternal death due to postpartum haemorrhage that occurred at a health facility.

In the case of a neonatal death, a modifiable factor could be if the birth attendant did not provide vigorous stimulation to the baby immediately after birth, or did not proceed to bag and mask ventilation, if vigorous stimulation failed to resuscitate the baby.

Modifiable factors can be described as delays in care (1st – a delay in a decision to seek care, 2nd – a delay in reaching care, or 3rd – a delay in receiving adequate care), and in levels of system failure (for example family- or patient-related/personal, administration-related, provider-related). A root-cause analysis can help to identify all the problems that led to or contributed to the system failure and the resulting stillbirth or neonatal death under review.

Information Systems

A functional MPDSR process involves local data collection and review, linked to existing information systems. Examples of these include:

Health Management Information System (HMIS)

An HMIS is a data collection system designed to support reporting, planning, management and decision-making in health facilities and organizations. Data are collected using standardized tools at the health facility, before being aggregated at different levels of the health system and used in health-related decision-making.

District Health Information System (DHIS2)

DHIS2 is a free and open source health information management software platform used by governments and organizations around the world. DHIS2 is used to aggregate, validate, analyse, manage and present information at subnational and national levels. The platform is available in eight different languages, and offers mobile features as well as web-based and offline support. DHIS2 also offers a number of mobile solutions where clients can use their mobile phones to register cases and events, conduct surveys and collect aggregate data.

Civil Registration and Vital Statistics (CRVS)

A well functioning CRVS system registers all births and deaths, issues birth and death certificates, and compiles and disseminates vital statistics, including cause of death information. Health facility reporting provides a good starting point for ensuring that births and deaths are reported to CRVS. Some countries have a CRVS office located within major hospitals, where both births and deaths can be registered. However, in other settings, especially where rates of maternal deaths, neonatal deaths and stillbirths remain high, the CRVS does not capture all births and deaths, or assign a cause of death. Many births remain unregistered, and most stillbirths and half of all neonatal deaths neither receive a birth certificate nor are counted as part of official statistics.

Relevant tools, forms and guidance

- MDSR technical guide glossary (page 66)
- The WHO application of ICD-10 to maternal deaths during pregnancy, childbirth and puerperium: ICD-MM
- WHO application of ICD-10 to deaths during the perinatal period: ICD-PM
- Standards and reporting requirements related for maternal mortality. In: ICD-11 Reference guide, Part 2 [website]. Geneva: World Health Organization; 2019
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 3, Session 2
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 1, Session 4
- WHO and UNICEF Analysis and use of health facility data guidance for RMNCAH programme managers
- DHIS2 website
- CRVS website

MODULE 2
Getting started at the facility level

Module 2: Getting started at the facility level

Step 1: Assess the current situation

Prior to implementation of MPDSR, conduct an assessment of the current situation of maternal death review, perinatal death review, and other quality improvement initiatives taking place, noting the level of implementation (e.g. facility, district, regional or national level). This could include mapping existing data collection, identifying potential meeting resources and other related committees (such as quality improvement), and clarification of regulations and legal protection. The **mapping tool**, which is to be used as a checklist, will help you to identify the current mortality audit and quality improvement systems and resources already in use in your facility or district. This checklist does not specify which items are essential before starting the MPDSR process because this will vary by context, but it provides a framework to assist in mapping what data sources exist, and where the gaps might be.

Step 2: Set up a steering committee

A steering committee at the facility level organizes and oversees the review process, including implementing and following up on action points. The facility steering committee has the following responsibilities:

- collects information on all pregnancies, births and deaths
- reviews deaths that are reported to the facility
- establishes medical causes of death
- determines if the death is a confirmed maternal death, stillbirth or neonatal death
- determines contributing, modifiable factors related to the deaths
- assesses quality of medical care
- provides recommendations for immediate and medium-term actions
- follows up on actions taken
- produces summary report and disseminates results.

While every member of the health service is responsible for implementing recommendations, the steering committee is responsible for following up on implementation of the recommendations in order to improve quality of care. The primary purpose of MPDSR is action, and without the support of key stakeholders, recommendations cannot be turned into meaningful change.

In order to avoid duplication of activities, one overarching team for quality improvement (QI) is recommended. At a minimum, MPDSR and QI meetings should be open to respective team members, with shared information including data, meeting action plans and reports. Where feasible, harmonized processes, and alignment of formal structures and reporting mechanisms will enable maximum benefit to be drawn from both these programmes. Please refer to Module 7 for further insights on quality of care (QoC) and MPDSR. The QI team can designate a specific steering committee for MPDSR if human resources allow. Given the challenges of coordinating meeting schedules across a large, high-volume tertiary or referral facility, separate obstetric and perinatal death review meetings may be held, with an MPDSR steering committee overseeing them both. A smaller steering committee for oversight and accountability can oversee two working subcommittees – one covering maternal deaths and the other covering perinatal deaths. Expertise for maternal death reviews should include obstetrics, midwifery,

anaesthesiology, medicine and pathology. Other experts involved in particular cases under review may be relevant, for example mental health experts, infectious disease specialists, emergency department representatives. For perinatal deaths, key members include obstetricians, paediatricians/neonatologists, midwives and neonatal nurses. Key managers and community liaisons should be part of the review process and may be permanent steering committee members if available. Larger committees may be considered when reviews involve several facilities, or at a regional or provincial level. In smaller facilities where human resources may be more limited, the committee will consist of the staff members who are available, and may represent a more generalist quorum. A small steering committee with a committed membership can still be a successful one.

Other departments that do not have a standing representative on the steering committee or in review meetings could still receive information related to the timing and outcomes of the meetings (e.g. a copy of the meeting minutes). If facility administrators are not part of the steering committee, they should receive meeting reports and may have a standing invitation to attend meetings, in order to ensure that recommendations requiring higher levels of influence are seen and acted upon. Depending on the circumstances, a community health or public health liaison, or someone representing peripheral or primary health facilities, may also serve on the steering committee. Depending on the hospital structure, there might be other possibilities for membership without direct clinical involvement, for example, patient attendants or support staff.

More information on the organizational structures of district, regional and national level steering committees can be found in Module 5.

Step 3: Determine operating procedures and tasks

A terms of reference document should be established for the steering committee, either by the local health authority, the facility administrators, or the quality improvement team. This will determine the composition of the steering committee, how often it will meet, and how often it will engage the wider team of practitioners, facility staff and relevant policy- makers. Again, the steering committee might be merged with an existing maternal or perinatal death review committee, or a separate audit team with overlapping membership.

A formal **terms of reference** for the steering committee should include the authority and accountability to:

- organize and call meetings;
- identify and collect information on maternal deaths, stillbirths and neonatal deaths occurring throughout the facility;
- organize meetings on a regular, recurring basis where deaths are to be reviewed;
- adhere to a specified meeting code of practice that upholds anonymity, confidentiality, beneficence and autonomy for both patients and staff members;
- promote confidentiality and a blame culture free environment;
- make recommendations for action aimed at reducing the number of preventable deaths and following up on implementation of the actions;
- produce a summary report about the data trends and the deaths investigated, ensuring anonymity, and circulate this within the facility, the provincial health department, and among relevant stakeholders.

The frequency of meetings will depend on the burden of deaths at the facility (and in the district or region), and how many deaths are reviewed at each meeting. Mortality review meetings, where the basic overview of number of births and deaths is presented, can take place as regularly as every morning. However, a larger periodic review meeting is necessary for the detailed review of select cases. “Zero reporting”, and meeting even in the case of no deaths in a given time period, is recommended for reviewing trends in overall data, and following up on action plans. Committees often aim to meet ad hoc as soon as possible (within a week) of a maternal death, with a standing meeting at monthly or quarterly intervals to review

deaths in more detail. Typically in higher mortality settings, perinatal deaths are reviewed at the routine meetings and not on an ad hoc basis after each death occurs. Depending on the burden of deaths, and staff availability, steering committees may choose to have a shorter weekly meeting (45–60 minutes), or more detailed 2–4 hour meetings less frequently. Steering committees should decide on an initial schedule, and be open to adjusting it if the need arises. A **sample information flow chart** is available and will be explained in Module 7. Moreover please refer to the **MPDSR review meeting minutes** template.

Relevant tools, forms and additional resources

- Situation mapping tool (Annex 1)
- Sample terms of reference for review committee (Annex 2)
- Sample meeting code of practice (Annex 3)
- Sample information flow chart (Annex 4)
- MPDSR integrated review meeting minutes and action items form (Annex 5)
- MDSR technical guide chapter: Development of an MDSR implementation plan
- MDSR technical guide: Committee worksheet (MDSR A6)
- Making every baby count guide: Meeting code of practice
- Making every baby count guide: Meeting minutes and action items form
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 2, Session 2
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 1, Session 6; and 7
- Video clip: Setting up a review committee.

MODULE 3
Identifying cases

Module 3: Identifying cases

What is the purpose?

To identify every pregnancy and birth, maternal death, stillbirth and neonatal death, even if only a selection of events is eligible for review.

How is it done?

The following questions can assist in the selection of sources to investigate and use in the review process:

- Where are deaths likely to occur in the facility?
- What kinds of records exist (e.g. antenatal registers, labour and birth registers, postnatal registers, registers from neonatal intensive care or special care baby units, emergency or operating theatre records, discharge logs with status of patient, paediatric registers)?
- Are the records paper-based or electronic?
- Are all the records housed in one location, or are they dispersed?

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). Any death of WRA in a health facility should trigger a death review, with a committee meeting taking place as soon as possible.

While many maternal and perinatal deaths will occur in the labour and postnatal ward, deaths that occur elsewhere in the facility are still important, and are less likely to be captured and reviewed through MDPSR processes. A death review that focuses on neonatal deaths should attempt to identify all the neonatal deaths, whether in the postnatal ward or the special care baby unit, or after readmission to the pediatric or general inpatient ward, or at the outpatient clinic. As the numbers of perinatal and neonatal deaths can be high, especially in large volume facilities, it may be necessary to assign a health provider to record and capture these deaths if feasible. This will assist in identifying patterns in missed opportunities for quality care across the facility, and present an occasion to engage with quality improvement personnel or teams.

Once all the locations where the data might be found have been identified, a plan for systematically reviewing these sources for potential maternal and perinatal deaths should be created by the steering committee, including a schedule for contacting various departments and checking all relevant registers. See the **Where to Look tool** for a systematic approach to identifying deaths.

Deaths can also occur in the community. There are different data sources available to identify community-based deaths such as homes, mortuary, funeral parlor, police post, children's hospital and others). Please see box below about how to identify community-based deaths.

Importance of community death notification and classification of Maternal and Perinatal Deaths

Identification and notification of community-based deaths is a key component of the MPDSR system. In some contexts, deaths occurring in the community or on the way to a health facility comprise the majority of deaths and are difficult to capture without a functional system. Identification and notification of all deaths (those in the facility and community) will provide more complete data on maternal and perinatal deaths, and allow an opportunity to document the factors contributing to those deaths for a more complete response. Suspected maternal deaths in the community may be reported by community health workers (CHW), traditional birth attendants, or other community leaders; verbal autopsies should then be performed to determine the 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.

Fig.2. Community networking for capturing community deaths

What is the outcome?

The systematic collection of data on all births and deaths and the types of events in the various places where events occur.

Relevant tools, forms and additional resources

- Where to Look tool for identifying facility maternal and perinatal deaths (Annex 7)
- MDSR technical guide chapter: Identification and notification of maternal deaths
- MDSR technical guide appendix 7: Community identification for suspected maternal deaths, page 114
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 1, Session 5
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 1, Session 5
- Ayele B, Gebretnsae H, Hadgu T, Negash D, G/silassie F, Alemu T, et al. Maternal and perinatal death surveillance and response in Ethiopia: Achievements, challenges and prospects. Biswas A, editor. PLoS One [Internet]. 2019 Oct 11;14(10):e0223540. Available from: http://dx.plos.org/10.1371/journal.pone.0223540

MODULE 4
Collecting information

Module 4: Collecting information

What is the purpose?

To collect a sufficient amount of data to contribute to a meaningful understanding of events, particularly data elements that will contribute to MPDSR and the formulation of solutions.

How is it done?

In order to ensure timely and thorough completion of files for meeting preparation, as well as planning for turnover and sustainability, at least two people should be designated to be in charge of collecting data and preparing cases for discussion in advance of the MPDSR meeting. It is likely that this process of data collection and case preparation will be done separately for maternal and perinatal events.

A short written summary of each death under review is usually prepared for the review committee presentation. This summary uses data from all sources and although concise, it includes all relevant information, both medical and nonmedical, as well as standard demographic data. The case summary may begin with some common defined variables, such as the mother's age, ethnicity, education and parity, and the gestational age at death, if applicable. A narrative describing the events that led to the death usually follows this information. Case summaries should present objective and de-identified information. Even if the identities of the patient and health-care workers are obvious in a smaller facility, this principle should be adhered to insofar as possible. All staff should be advised that thorough history-taking and adequate patient notes are essential to providing good quality and continuity of care.

When MPDSR is just getting started, senior members of the steering committee might lead this process. As the process becomes more established, the role could be transferred to, for example, a well trained data clerk, or a midwife or physician. The specific tasks and responsibilities should be outlined in the job description of the person responsible in order to create a sustainable practice institutionalized within specific roles, rather than allowing the task to rest with certain individuals who may leave the service without a contingency plan. Training for this role could include practice exercises with an emphasis on completing forms legibly and reviewing forms for completeness. The use of structured paper-based or electronic forms will require less skill and discretion on the part of the data collector compared with an unstructured workbook.

There are three new practical resources to build health worker skills to implement MPDSR processes in low-resource settings. The first is the MDSR Capacity-Building Materials developed by the USAID-funded Maternal and Child Survival Project (MCSP), which are designed to build the capacity of district managers and facility health workers to strengthen MDSR processes in their local setting. The second are capacity-building materials on perinatal death surveillance and response developed by UNICEF. The third is a virtual Public Health course on MPDSR, developed by the Latin American Center for Perinatology/ Women's and Reproductive Health Unit (CLAP/WR). Additionally an MPDSR Training of Trainers resource package has been developed by MOMENTUM Country and Global Leadership (MCGL) in collaboration with other partners, building on the above capacity building resources to support implementation included in this document.

Maternal deaths

As described in Module 2, reports of all probable maternal deaths should be collected by the steering committee. Data from multiple sources, including patient records, are verified and compared. For example, data may initially be extracted from the obstetrics & gynaecology admission and discharge register, and complemented with information from the labour and childbirth ward register and theatre or minor surgery record books. Case notes, patient records including referral notes, postoperative notes and laboratory results, when available, can also be valuable sources of information. This can be compared against HMIS and local CRVS information, if available. Deaths occurring in the community that have been notified to the facility or district should also be reviewed.

The simplest approach is a review based on a single facility, which only collects data from the site where the death occurred. However, if a woman who died received care at any other facility, the additional records should also ideally be abstracted. Although more difficult to obtain, additional information from the woman's family is potentially valuable. The data collected should include a summary of the chain of events that led to the maternal death, using corroborated information from all available sources.

A number of sample forms exist, including the summary form for maternal deaths in facility from the MDSR technical guide and the new **MPDSR – Facility monthly summary form**.

Perinatal deaths

Once identified, information on all events, i.e. births and deaths, should be documented and tallied using consistent criteria and definitions linked to national systems such as HMIS and CRVS. A set of suggested **minimum set of perinatal indicators** to be collected for each birth and death is available. These include key data elements such as date of birth and death and birthweight. Many facilities will already be compiling these indicators within the health information system, and this list is provided only as a guide to ensure that the most basic pieces of data are collected. In some settings, it may be feasible to capture and track additional information relating to the health and sociodemographic status of the mother, together with more information on the type of care that she and her baby received.

Facility-wide data and trends may also be regularly reviewed at perinatal death review (PDR) meetings. These data can be collected through a tool such as the **MPDSR – Facility monthly summary form**. The instructions accompanying this form include a list of questions to consider in attempting to ensure the complete capture of all births and deaths in your facility.

The **stillbirth and neonatal death review form** is the main source of information for the perinatal death review. The steering committee may choose to complete this form for each death, or just for the cases that the committee intends to review during the meetings. The form contains additional information that can prove valuable to understand the case, cause of death and underlying contributing modifiable factors.

Although it is more efficient for a designated individual or small group to complete the whole form for each case before the MPDSR meeting, these sections may also be discussed and completed during the meeting itself, until the designated individuals are comfortable with completing the process independently. At the outset, it may be particularly helpful to complete the section on critical delays and modifiable factors as a group.

There are several general principles to keep in mind when completing these forms.

The first principle is to avoid assumptions: if any information is missing, such as the results of a standard test, this should be marked "unknown," not assumed or left blank.

The second principle is to consider the source. With gestational age, for example, it is important to note the source of that information (e.g. mother's estimate of last menstrual period, early or late ultrasound, etc.)

The third principle is that some information found in charts and registers may be contradictory. It is important to highlight these contradictions in the review process, and to correct or resolve them to the extent possible before reporting the relevant data to higher levels of the health system.

Selecting cases for review

To identify the levels and determinants of maternal mortality and emphasize the message that no maternal death is acceptable, all maternal deaths must be reviewed. In facilities where maternal deaths are relatively few in number (or where there has been no death over a period of review), the committee may also want to consider reviewing near-miss cases.

For perinatal deaths, which are more frequent events than maternal events, the situation may be different. In smaller facilities, it may be possible to review each death, but in larger hospitals with a higher caseload, a sample might be reviewed. Basic data are collected on all events, but the steering committee may elect to review only specific cases. Depending on the facility's staffing levels and workload, an in-depth review of 2–3 cases per meeting may be considered, although new committees might want to start with just 1–2 cases per meeting, and focus on the quality of the review.

More time is usually required to review term intrapartum stillbirths and early neonatal deaths, especially in cases of no malformations and average weight. The number of cases that can be reviewed in one session will vary by case mix and familiarity of the review team with the process.

There are different approaches that can be used in order to select a subset of cases. The easiest method is to select deaths randomly, e.g. every fifth death. As teams gain more experience, this approach may be modified. For example, it may be decided to review cases that might be more easily prevented, such as term neonatal deaths and intrapartum stillbirths, since these may be more likely to lead to actionable changes to the care provided, referral procedures, or community practices.

Please see box below on how to collect information about community-based deaths.

Community verbal autopsy

Community-based maternal death reviews (or verbal autopsies) are a method for determining the medical causes of death and ascertaining the personal, family or community factors that may have contributed to deaths in women who died outside of a health facility. This information can be combined with data from facility-based death reviews. Verbal autopsies can be sensitive, so it is important to take these aspects into consideration when planning the verbal autopsy and the team that will collect the information. Suspected maternal deaths in the community are usually reported by community health workers or other community representatives to the appropriate authority ideally within 48 hours.

What is the outcome?

A basic set of information captured on every event that occurs in settings with limited capacity for data collection and analysis, and a more detailed set of information where capacity allows, and for the deaths that will be reviewed in greater detail.

Relevant tools, forms and additional resources

- MPDSR – Facility monthly summary form and instructions to complete it (Annex 8 and 9)
- Maternal death case review form and instructions to complete it (Annex 10 and 11)
- Stillbirth and neonatal death review form and instructions to complete it (Annex 12 and 13)
- Minimum perinatal data set (Annex 14)
- MDSR technical guide chapter: Identification and notification of maternal deaths
- MDSR technical guide appendix: Types of facility information to collect (A3)
- MDSR technical guide (Appendix 4) Draft of community autopsy tool for maternal deaths, page 73
- Making every baby count guide: Stillbirth and neonatal death review form, page 71
- Making every baby count guide: Births and deaths summary form, page 82
- Making every baby count guide: Minimum set of perinatal indicators, page 87
- Making every baby count guide: Approaches for classifying modifiable factors, page 92. Video on audit and neonatal deaths
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 2, Session 3
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 1, Session 5
- Virtual Public Health Campus on Surveillance and Response in the case of maternal and perinatal death (MPDSR)
- MPDSR Training of Trainers package

MODULE 5

Conducting joint maternal and perinatal death reviews

Module 5: Conducting joint maternal and perinatal death reviews

What is the purpose?

Integrating processes for maternal and perinatal death reviews and coordinating activities where feasible, without losing speciality-specific detail.

How is it done?

It is important that the processes for maternal and perinatal death review are coordinated and linked, rather that operating in parallel. In some settings, the implementation of either maternal or perinatal death review may be more advanced. If a supportive health policy framework already exists for either maternal or perinatal death review, this will help to facilitate the process of moving towards an integrated MPDSR system. It may be possible to integrate the process of reviewing both maternal and perinatal deaths within these platforms.

If maternal mortality and morbidity review meetings already exist at a health-care facility, with all maternal deaths being reviewed at every meeting, multidisciplinary teams may consider reviewing, at a minimum, a selection of intrapartum stillbirths and first-day neonatal deaths. If only a subset of all stillbirths and neonatal death cases is being discussed at review meetings, key details should still be recorded for each patient, in line with the **minimum perinatal dataset**. Given the higher numbers of stillbirths and neonatal deaths than maternal deaths, it might make sense to institutionalize separate but linked perinatal meetings once the review process has been established, especially in large facilities. If MPDSR exists at various levels of the health system, information should be systematically shared.

Step 1: Plan and prepare for review meetings

The steering committee should agree on a **meeting code of practice**, or a similar document that participants will sign, promising to work as collaboratively and constructively as possible. Participants need to be assured that the sole purpose of the review process is to save future lives and improve the quality of the health services, and not to find fault or discipline providers. Legal counsel should not be involved at any stage of the review process, due to the possibility that this might hinder true reporting of numbers and causes of deaths. Remember, the focus of the review needs to be on improving the system, not blaming individuals, whether they be health professionals, the patient, family members, or others. (Please see Module 10 for additional information.)

In order to ensure timely and thorough completion of files for meeting preparation, as well as planning for turnover and sustainability, at least two people should be designated to be in charge of collecting data and preparing cases for discussion in advance of the death review meeting. This could be anyone, such as a data clerk, midwife or physician. However, the task should be outlined in the job description of the person responsible, in order to create a sustainable practice institutionalized within specific roles, rather than assigned to certain individuals.

Step 2: Conduct integrated review meetings

A skilled, independent and accepted chairperson is needed to guide the discussion. While the tendency is to designate a senior clinician, such as a doctor, it is important to consider nurses and midwives for the role, and to involve them in the process.

At least one participant needs to be assigned to taking notes or meeting minutes, as well as to filling out all forms as the review proceeds. This role should have at least one backup for leave coverage, and for long-term sustainability. To maximize meeting time for discussion of recommendations and actions, forms should be completed in advance and not during the meeting. The minute-keeping participant should record (at least): any statistics discussed, cases discussed (including causes of death and modifiable factors identified), and action plans for implementing recommended solutions. A number of tools exist to support this process, including the **meeting minutes and action items form**, or the sample **committee worksheet**.

Step 3: Finalize forms and flow of information

The steering committee should establish a data flow chart, which can be used to assign responsibility to named people along the path of data collection. A sample **information flow chart** is included in the appendices. Forms for gathering and organizing information are included in this operational guide, along with steps for completion.

Step 4: Prepare meeting reports

A summary report can be useful to document data trends, and as a mechanism to follow through on recommendations. The scope of the report may vary, depending on the audience, frequency and approach. Examples of different types of meeting reports are given below. The steering committee should decide on the frequency with which this report will be compiled, by whom, and the content to be included. The frequency of a summary report might range from quarterly at health facility or district level, to annually or every other year at national level. This does not need to be an exhaustive report, but a summary of key trends in outcomes and actions. It is a good opportunity to highlight positive outcomes and success stories. A **sample report outline** is available as an annex.

Examples of different types of meeting and summary reports

Single facility death review report, or compilation of key actions from meeting minutes

Audience: internal document, copied and distributed to all staff.

Objective: to share findings and recommendations, focusing on positive recommendations, rather than placing blame. This is particularly important if the MPDSR process only involves a single facility, and there is no routine district or national level reporting.

District-level, or other grouping of facilities report

Audience: all facilities involved in conducting death reviews and submitted data, other facilities in the area not conducting reviews, decision-makers at various levels.

Objective: to provide a broader picture of trends in births and deaths, potentially including community surveillance data and linking to HMIS and CRVS, and distribution of deaths by place and level of facility. The report can highlight recommendations and follow-up on actions outside the jurisdiction of a single facility.

National-level report

Audience: usually national and high-level, and widely distributed to all stakeholders. This may include ministries or departments outside health, such as education or infrastructure, as well as the general public and media.

Objective: a comprehensive report focusing on accountability, detailing local, regional and national efforts to track trends and identify and address gaps in care, with more general recommendations and efforts requiring interministerial collaboration.

Reviews of 'near-miss' maternal and perinatal deaths

MPDSR can potentially be expanded to include reviews of near-miss cases, where the patient survived but nearly did not, such as in cases of severe obstetric haemorrhage or eclampsia for the mother, or asphyxia or severe infection for the baby. This process can add more depth to data collection, and better inform quality improvement strategies. It is described in other resources, including *Beyond the Numbers: Reviewing maternal deaths and complications to make pregnancy safer* (2004), and the *WHO near-miss approach for maternal health*.

What is the outcome?

A phased approach to an integrated, multidisciplinary review process for maternal and perinatal deaths. MPDSR is an ongoing set of activities and not a one-off event. Some of the essential factors for the sustainability of this process include:

- designating and supporting MPDSR coordinators, either as a stand-alone role or integrated into existing responsibilities at facility, district and national levels;
- promoting a no-blame culture through mentoring and open communication, and a meeting code of practice;
- institutionalizing multidisciplinary review through regular meetings, clear membership of committees, and follow-up on recommendations;

- strengthening the health workforce by including MPDSR in pre-service and in-service training and by implementing clinical outreach visits and supervision across different levels of care;
- strengthening accountability at all levels;
- improving communication and networking between health system levels, facilities and different role players.

Ideas for expanding maternal and perinatal mortality audit

Is the review committee confined to a single team or unit?

- Consider expanding to include multidisciplinary membership.

Are maternal deaths few and far between?

- Great! Consider incorporating regular maternal near-miss reviews.

Is the idea of reviewing all perinatal deaths overwhelming?

Consider:

- capturing and reviewing only high-level quantitative indicators for all perinatal deaths;
- adding qualitative reviews of those cases directly related to obstetric care, e.g. intrapartum stillbirths.

Is the review committee ready to take on more perinatal death reviews?

Consider:

- introducing reviews of more cases and a wider range of causes of death;
- monitoring more quantitative data trends (e.g. causes in different gestational age or weight categories).

Please see box below to know how to engage the community in participating in review of facility-based deaths.

Community Participation in Review of Facility-Based Deaths

Engaging community members in the review of deaths occurring in health facilities is an important component of the MPDSR process. This allows community members an opportunity to participate in the discussion, share views, and ensure their voices are heard.

There are several ways community members can participate in the review of facility-based deaths such as: 1) expanding Steering Committees to include community members such as religious leaders; and 2) conducting forums on quality of care with community members to incorporate into SMART recommendations. Engaging communities and ensuring multiple perspectives for each death can reduce blame on health care providers and create a trusting environment for maternal and perinatal health.

Relevant tools, forms and additional resources

- MPDSR integrated review meeting minutes and action items form (Annex 5)
- MPDSR – Facility monthly summary form and instructions to complete it (Annex 8 and 9)
- Sample information flow chart (Annex 4)
- Sample integrated MPDSR report outline for a single facility (Annex 6)
- MPDSR monitoring framework (Annex 15)
- MDSR technical guide committee worksheet
- Making every baby count guide: Meeting code of practice
- Making every baby count guide: Meeting minutes and action items form
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 2, Session 2
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 1, Session 6 and 7

MODULE 6
Analysing and presenting information

Module 6: Analysing and presenting information

What is the purpose?

To use quantitative and qualitative data to identify patterns and trends in a way that illuminates potential solutions.

How is it done?

MPDSR is not primarily a process to produce data, but there are a number of informative analyses that can be undertaken by the steering committee lead, or designated staff, and presented at scheduled meetings, as well as posted publicly within the wards or units involved.

Analyses conducted at the facility level will have different functions and corresponding responses from those at district and national levels. All facilities should know their facility-specific number of maternal and perinatal deaths, and each should be able to calculate indicators for the facility and report on the causes of deaths and related background characteristics captured in the minimum perinatal dataset. Health facilities with a large volume of deliveries (500 or more annually) should also be able to perform descriptive analyses of facility-based maternal and perinatal deaths.

The analysis process should avoid making assumptions about the data. Missing and contradictory information should be summarized, noted and reported to the group. This can be frustrating as there may be gaps in the summary, but this missing information should be treated as an important data point in its own right, representing a lack of complete reporting.

The steering committee may want to select a few indicators to focus on and follow over time, to see if outcomes improve after implementing recommendations from a mortality review. The numbers contributing to the in-facility numerator and denominator of the indicator can be compared with data extracted from HMIS, DHIS2 and/or CRVS. The review team should remain open to considering all possible problems and factors revealed by the data.

For both maternal and perinatal deaths, data should be presented to the review committee in a qualitative fashion that describes the course of pregnancy and includes descriptions of where and how care was provided. Essential interventions that took place or were missed, at all levels, should be described, together with any problems that may have contributed to the death. The primary and final cause of death should be detailed, as well as the modifiable factors that contributed to it.

The combined quantitative and qualitative analysis will allow identification of patterns and trends of problems, both nonmedical and medical, which lead to deaths. Indicator tallies over time are simple and quick to prepare, but more precise information could be obtained by geographically mapping key details related to specific indicators. For example, if a number of women presenting with obstructed labour come from a specific area, there may be an issue related to transport or another concern affecting access to the hospital. Mapping cases may be time-consuming for the steering committee, but it can provide more information about the population's care-seeking behaviour, existing social and health services, and the natural environment.

Finally, electronic programmes can be designed to run analyses and produce standardized tables, graphs and maps, which may enhance the use and reporting of data. For example the South African Perinatal Problem Identification Programme is an open-source **software** for capturing and analysing perinatal deaths and modifiable factors.

What is the outcome?

Reliable indicators and trends over time, including tables, graphs and other visual displays, which can be cross-referenced with other information systems such as HMIS, DHIS2, CRVS.

Relevant tools, forms and additional resources

- MPDSR monitoring framework (Annex 15)
- MDSR technical guide chapter: Data aggregation and interpretation
- MDSR technical guide chapter: Analysis
- MDSR technical guide appendix: Steps to completing the committee worksheet (A6)
- Making every baby count guide: Sample calculations for reporting, page 99
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 3, Session 3
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 2, Session 3
- MPDSR Action Tracker tool, Options Consultancy Services ltd
- Open-source software: the South African Perinatal Problem Identification Programme

MODULE 7
Recommending actions and implementing change

Module 7: Recommending actions and implementing change

What is the purpose?

To use data to reach consensus on priorities and inform actionable recommendations.

How is it done?

The main purpose of the MPDSR meeting is to identify solutions to gaps in the management of the case(s) under consideration. One of the most challenging parts of the review process is the formulation of appropriate recommendations, but this step is critical. Findings from death reviews can lead to immediate actions to prevent similar deaths, especially those at health facilities, by identifying gaps that should be addressed at the point of care; other recommendations might require the action of other, more distal stakeholders. With the correct processes in place for sharing information, deaths that have a modifiable factor linked to the community or the referral pathway may also lead to actions, even though this may be outside the sphere of control of the review committee. There is no need to wait for aggregated data over time, or from multiple facilities, to begin implementing actions.

The meeting chairperson should lead a discussion of the chain of events related to the case, reflecting on the modifiable factors, and any changes in trends from meeting to meeting. The committee should examine the reliability of the information available; the adherence to clinical standards and guidelines in the provision of care, where available; and the quality of the monitoring of the patient's condition. The group should attempt to reach consensus on appropriate, evidence-based strategies required to address the main gaps in care that have come to light. Involving the Quality of Care focal point or team in developing recommendations and actions will maximize the opportunity to ensure that responses are addressed through a quality improvement cycle process. Minuted notes with recommendations, suggested actions, and identification of the person responsible for implementing and/or tracking each should be compiled (see **meeting minutes and action plan**).

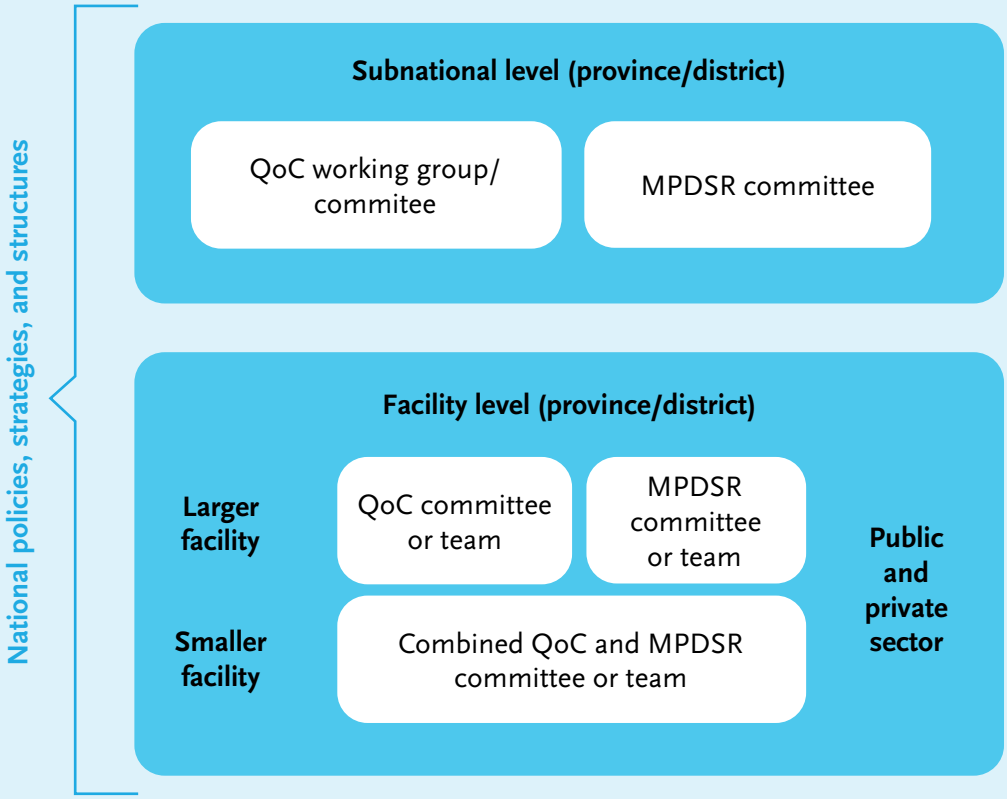
Facilitating linkages between quality improvement processes and MPDSR

Effectively conducted death reviews generate high-quality information on leading local causes of death and important common contributors to those deaths. This information can help to inform prioritization of quality improvement interventions likely to produce real impact. It can also promote understanding of common contributors and promising changes to systems or service delivery that will overcome identified gaps. Quality improvement processes prioritize measurable time-bound objectives based on local disease burden, equity and management gaps.

A common feature of MPDSR is inadequate systematic monitoring of implementation of the audit cycle's response element, and analysis of whether implemented responses are yielding desired effects. Integrating MPDSR within broader quality improvement efforts has the potential to link responses to a more systematic monitoring and analysis process at facility and subnational level. MPDSR recommendations might receive increased support for follow-up if they were incorporated into broader quality improvement efforts at facility or district level.

The structures that support quality improvement processes and MPDSR will look different across settings and levels, but aligning these, and at least formalizing information sharing and communication, is more likely to result in impactful changes arising from MPDSR activities.

Fig. 3. Possible alignment of QoC/QI for MNCH and MPDSR across health system levels



Review committees will be able to determine from the results of their own analysis which mixture of strategies will be best suited to their circumstances, including their access to resources. However, solutions should always be **SMART**: specific, measurable, appropriate, relevant and time-bound (see Box below). Responsibility for tracking the progress of each solution should be assigned to specific individuals. Even if the designated person is not solely responsible for making the change, assigning implementation and monitoring tasks to individuals reduces the likelihood of failure to follow through with action.

Developing SMART recommendations

Is the recommendation SPECIFIC?

Does it clearly articulate what needs to be done to address the problems, causes?

Is the recommendation MEASUREABLE?

Can it be monitored on a monthly or annual basis?

Is the recommendation APPROPRIATE?

Is it feasible to implement at the health facility level? If not, then it should be recommended for other levels of the health system, with a designated person responsible to follow up.

Is the recommendation RELEVANT?

Does it address a specific problem, factor, cause or subcause?

Is the recommendation TIME-BOUND?

Does it include a specific time period, as well as who is responsible?

Example of a maternal death review, recommendations, and actions that led to change

Case summary: A 23-year-old woman was admitted to hospital at 12 weeks' gestation in general poor health. She had blood pressure of 49/25 mmHg, tachycardia (120 beats/min) and body temperature of 36.6 °C. She said she was given some herbs by a woman in the village to insert into her vagina to try to end the pregnancy, since she was unmarried. She was put on isotonic solution while further assessments were completed. Her haemoglobin was 6 grams/dL. Ultrasound revealed echogenic content suggestive of product of conception with free fluid in the uterus and pelvic cavity. She was taken to the theatre where an evacuation of the uterus was performed. Foul smelling products of conception were removed. She was put on IV fluids and antibiotics. Despite aggressive hydration therapy including blood products, by central venous catheterization, she had persistent bradycardia and hypotension. The woman died after five hours, despite all efforts.

Modifiable factors identified:

Patient-related: The patient accessed potential harmful care in the community and used herbs that she was told would end her pregnancy.

SMART RECOMMENDATION: Community Liaison (CL) together with Dr X (both in attendance at the review meeting) to request facility administrator (absent, with regrets) to follow up with district health management team about establishing a series of community engagement sessions led by CL and Dr X regarding traditional medicines, and the danger of this herb in particular for pregnancy termination. Due to the potentially sensitive nature of this conversation, CL will engage key community representatives and faith leaders. CL will report back on progress to the MPDSR Committee at the next meeting.

ACTION TAKEN: Within the following quarter, after receiving approval and token funding support from the district health management team, six engagement sessions were hosted by CL and Dr X with women's groups, faith-based leaders and traditional healers.

Provider-related: The guidelines for management of incomplete septic abortion were not followed.

SMART RECOMMENDATION: Nurse in-charge to organize refresher training on management of incomplete septic abortion by next quarter, to be attended by all relevant staff in women's ward, maternity unit and theatre staff. Hospital administration to ensure that postpartum haemorrhage guidelines are available and visible on the ward, and to all staff involved in emergency obstetric care.

ACTION TAKEN: In-service training on management of incomplete septic abortion was made mandatory for all maternity staff; booklets with management guidelines were made available to all staff; posters on management of incomplete septic abortion were placed in all labour wards and staff areas; maternal sepsis deaths were tracked and a decrease noted.

Administrator-related: The maternity nursing staff is overloaded and not supported by a doctor, particularly on weekend mornings, when this admission occurred.

SMART RECOMMENDATION: Doctor X (in attendance at the review meeting) to request facility administrator (absent, with regrets) to ensure that nursing staff complement is full, including coverage on weekends, by the end of next quarter.

Example of a perinatal death review, recommendations, and actions that led to change

Case summary: 21-year-old gravida 2, para 1. At 20 weeks' gestation she started antenatal care (ANC) at the nearby antenatal care clinic. No abnormalities were found. She attended the second visit at 28 weeks, and at 32 weeks she attended the ANC clinic again. At the gestational age of 33 weeks her membranes ruptured and she started leaking amniotic fluid of normal colour at 09:00, but there were no contractions. She realized that the baby was still quite small to be born. When her husband came home from work at 16:00 she informed him, and the next day he arranged transport and took her to the general hospital. At the hospital she was admitted to the maternity unit with a diagnosis of threatened premature labour and put on complete bed rest. Monitoring was infrequent. The draining of liquor diminished, but became lightly meconium stained on the second day. After four days she had slight contractions. She was prescribed a salbutamol intravenous infusion of 10 mg/1 litre normal saline, but despite this she went into labour the next day. During admission, her vital signs and the fetal heart rate were only recorded 12-hourly, and fetal heart rate monitoring during labour was scarce. On the day she went into labour a temperature of 38 0C was recorded in the morning. At 15:00 she gave birth to a premature male infant weighing 1800 g, with an Apgar score of 4 after 1 minute, and 7 after 5 minutes. The cord was clamped after 3 minutes, the baby was wiped dry and wrapped in a cloth, received 1 mg Vitamin K1 intramuscularly, and was placed beside the mother. After the mother received 10 U oxytocin, the placenta was delivered by controlled cord traction. The newborn was unable to suck and was put on 3-hourly nasogastric tube feedings of expressed breast milk and received ampicillin 100 mg BD and gentamycin 5 mg OD. The baby had chest indrawing, was breathing more rapidly than normal, and was also grunting. Unfortunately, the maternity had run out of oxygen cylinders, so oxygen could not be given. At night the baby stopped breathing. There was no oxygen or bag and mask available. In additional, no one on the staff had been trained in resuscitation with bag and mask.

Modifiable factors identified:

Patient-related: The patient showed up late for antenatal care in the second trimester and had a very poor follow-up. The gestational age may not have been accurate, as ultrasound for gestational age dating was not performed. By consequence, either the estimated gestational age of 33 weeks at birth may have been much lower – and the patient should have received corticosteroid treatment – or the baby was growth restricted and hence more susceptible to asphyxia during labour, and this was not picked up during the antenatal care visits.

Provider-related: The guidelines for monitoring antenatal inpatients were not followed.

ACTION TAKEN: Incharge released a circular to staff stating the importance of 4-hourly monitoring of vital signs, contractions and fetal heart rate for all antenatal patients.

Provider-related: Patient charting was not completed adequately, including vital signs and fetal heart rate.

SMART RECOMMENDATION: Incharge to conduct in-service training on patient charting and mentorship around completion, by the end of the month. Committee to assess patient chart completion rates at the next review meeting.

ACTION TAKEN: In-service training on why these data are important, and incharge introduced random record spot checks; patient chart quality tracked by committee and increase in completion rates noted.

Provider-related: No use of bag and mask for resuscitation.

SMART RECOMMENDATION: Paediatrician X to lead a series of lunchtime resuscitation trainings for all staff to attend, by the end of next month. Maternity incharge and Special Care Unit incharge to follow up on availability of neonatal bag and mask in the childbirth and postnatal units, and report back at the next review meeting.

ACTION TAKEN: Neonatal bag and masks were relocated from locked cabinets to designated areas, and in-service neonatal resuscitation training provided for all staff; number of babies resuscitated with bag and mask was tracked and an increase noted.

Administrator-related: No oxygen.

SMART RECOMMENDATION: Hospital administrator to review supply management process in relation to oxygen supplies and referrals, and report back by the next meeting.

ACTION TAKEN: Review of supply management process to designate emergency procedures for procurement of essential supplies, including oxygen and pulse oximetry, and a policy introduced for referral when, in extenuating circumstances, oxygen is unavailable.

Administrator-related: No immediate skin-to-skin policy or Kangaroo mother care (KMC) unit in the facility.

SMART RECOMMENDATION: Department head to issue a circular within two weeks to maternity staff regarding adoption of immediate skin-to-skin care for all babies after childbirth. Paediatrician Y and Maternity Nurse B to develop a plan for a KMC unit within the next six months and report back on progress at subsequent meetings.

ACTION TAKEN: Immediate adoption of standard to use skin-to-skin care straight after childbirth, and plan in place to start a new KMC unit.

Please see the box below about Community Participation in monitoring MPDSR SMART recommendation.

Community Participation in monitoring MPDSR Responses

Community members can be engaged in the process of monitoring the implementation of recommended actions in partnership with health providers and health managers as well as other relevant stakeholders. Effective monitoring process rely on well demarcated roles and responsibilities for any recommendations arising from the MPDSR process (Bandali et al., 2019) For instance community members can hold joint meetings where they review progress made on various recommendations. This can also be an opportunity to celebrate successes as well as identify barriers to implementation. This process requires on-going dialogue and partnership among stakeholders.

What is the outcome?

Documentation of the main problems, root causes and factors, specific actions to address these causes and factors, identification of responsible persons, and a time frame for implementation.

Relevant tools, forms and additional resources

- MPDSR integrated review meeting minutes and action items form (Annex 5)
- MDSR technical guide chapter: Response
- MDSR technical guide chapter: Dissemination of results
- MDSR technical guide appendix: Implementation planning tool (A8)
- Making every baby count guide: approaches for classifying modifiable factors, meeting minutes and action plan and fishbone diagram, page 102
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 3, Session 2
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 2, Session 4
- Knowledge Brief: Implementation of Maternal and Perinatal Death Surveillance and Response as part of the Quality of Care efforts for Maternal and Newborn Health: Considerations for synergy and alignment
- Bandali, S., Thomas, C., Wamalwa, P., Mahendra, S., Kaimenyi, P., Warfa, O., & Fulton, N. (2019). Strengthening the "p" in Maternal and Perinatal Death Surveillance and Response in Bungoma county, Kenya: Implications for scale-up. BMC Health Services Research, 19(1), 1–10. https://doi.org/10.1186/s12913-019-4431-4
- Marston, C., Hinton, R., Kean, S., Baral, S., Ahuja, A., Costello, A., & Portela, A. (2016). Community participation for transformative action on women's, children's and adolescents' health. Bulletin of the World Health Organization, 94(5), 376–382. https://doi.org/10.2471/BLT.15.168492
- Melberg, A., Mirkuzie, A. H., Sisay, T. A., Sisay, M. M., & Moland, K. M. (2019). "Maternal deaths should simply be 0": Politicization of maternal death reporting and review processes in Ethiopia. In Health Policy and Planning (Vol. 34, Issue 7). https://doi.org/10.1093/heapol/czz075
- Renedo, A., Komporozos-Athanasiou, A., & Marston, C. (2018). Experience as Evidence: The Dialogic Construction of Health Professional Knowledge through Patient Involvement. Sociology, 52(4), 778–795. https://doi.org/10.1177/0038038516682457
- WHO. (2017). WHO community engagement framework for quality, people-centred and resilient health services.

MODULE 8
Monitoring MPDSR implementation and improvements in quality of care

Module 8: Monitoring MPDSR implementation and improvements in quality of care

What is the purpose of monitoring the MPDSR system?

Once an MPDSR system has been established, it is essential to maintain and supervise the system by monitoring.

- To document the implementation of MPDSR system including solutions recommended by MPDSR steering committees;
- To deliver improvements to the quality of care provided.

How is it done?

Monitoring should be conducted in two areas:

- assessment of how well the MPDSR system it is functioning and whether the recommendations are being enacted; and
- assessment of the maternal and perinatal health indicators to monitor changes.

Monitoring the MPDSR system

A monitoring system should assess the following elements:

- whether the recommendations for action have been implemented
- whether the recommendations are being implemented on a proposed timeline
- whether the recommendations are achieving the desired results
- where any problems may lie if the desired results are not being achieved

Analyzing indicators and examining trends can provide a quick snapshot of whether the MPDSR system are improving quality of care and outcomes and can suggest areas that need further improvement or where more efforts are needed. Users of the MPDSR system may be more motivated to provide the needed data and enact recommendations if they periodically receive feedback linked to the data, such as long-term trends showing a reduction in the rate of intrapartum stillbirths over a five-year period.

This monitoring is done by continuously collecting and reporting information on output and outcome indicators such as:

- the number and percentage of maternal and perinatal deaths that were notified and reviewed (outcome indicator)
- the number and percentage of recommendations that were implemented (outcome indicator)
- information on how many steering committee meetings were completed (output indicator)
- completeness of MPDSR reporting (output indicator)
- whether recommendations were properly formatted and feasible to implement (ouptput indicators)

In addition to monitoring how the MPDSR system itself is working, it is necessary to monitor the health outcomes and trends in the area to see whether maternal and perinatal deaths especially at district/regional and national levels. These are measured using **impact indicators** such as the following:

- number of maternal and perinatal deaths, by cause of death
- maternal mortality ratio
- perinatal mortality rate

Monitoring the MPDSR system may be carried out at health facility, district/regional, and national levels and the approach will vary depending on the particular circumstances in each facility and organizational level.

There are also a set of common/core indicators that should be monitored and reported by all countries to track global progress in MPDSR implementation. These indicators include:

- institutional maternal mortality ratio
- institutional perinatal mortality ratio
- number of maternal and perinatal deaths, by cause of death
- maternal and perinatal deaths notified and reviewed
- MPDSR steering committee meetings
- completion of annual reports
- MPDSR recommendations implemented

Details on how to conduct MPDSR monitoring can be found in Annex 15, MPDSR monitoring framework; a list of common/core indicators is in Annex 16; there is a catalogue of monitoring indicators to be used at the global, national and district levels in Annex 17.

Evaluating the MPDSR system

In addition to monitoring, it may sometimes be necessary to conduct a more detailed evaluation to assess whether the system could function more efficiently and effectively. This may be needed if the routine monitoring indicators demonstrate that:

- one or more of the steps in the MPDSR process is not reaching expected results
- the indicators demonstrate that health outcomes are not improving despite actions being taken
- maternal and/or perinatal mortality ratios/rates are not decreasing

While it is important to look at reductions in in-facility mortality rates, trends in these rates are not always the best illustration of improvements in care. This is because there are many factors that influence the mortality rate/ratio at a single facility and numbers might be small making estimates unstable. It may also be useful to conduct an evaluation looking at improvements in the community, the health system, or society in general (e.g. female education), and changes in the types of delays or modifiable factors that are being identified. A more detailed evaluation can also be used to assess whether the system can function more efficiently. Tools have been developed that can be used to help health-care managers, implementing partners and stakeholders to periodically assess structures and activities that support MPDSR.

What is the outcome?

Appropriate, evidence-based performance measures and key functions of MPDSR tracked at each level of the health system.

Relevant tools, forms and additional resources

- MPDSR monitoring framework (Annex 15)
- Common measures for monitoring MPDSR across countries (Annex 16)
- Indicator catalogue for monitoring MPDSR at health facility, district/regional and national levels (Annex 17)
- MDSR technical guide chapter: Monitoring and evaluation of the MDSR system
- MCSP tools for assessing MPDSR processes in facilities and subnational level
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 3, Session 3
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 2, Session 5

MODULE 9
MPDSR in humanitarian and fragile settings

Module 9: MPDSR in humanitarian and fragile settings

What is the purpose?

To capture and strengthen information on maternal and perinatal deaths, as well as provide information on interventions to improve the quality of care in humanitarian and fragile settings.

How is it done?

The process of collecting information on numbers and causes of deaths is essential for developing interventions to prevent similar future deaths, particularly in humanitarian settings, where the health system is strained and needs may be constantly shifting within the affected population.

In humanitarian and fragile settings, mortality surveillance is crucial, however health systems are often constrained and there is a paucity of data from these settings. MPDSR can be used to collect and monitor information on deaths, but it is essential to adapt it depending on the type of humanitarian and fragile setting.

In October 2019, WHO, UNICEF, UNHCR, UNFPA, CDC and Save the Children convened an expert meeting bringing together key stakeholders from MPDSR, humanitarian, and development sectors. The group developed a series of recommendations for implementation of MPDSR in these settings.

Different scenarios in humanitarian and fragile settings have been identified:

Acute phase of humanitarian settings Definition: first 6 months post disruption	MPDSR should NOT be implemented. Tracking deaths is crucial, and the focus should be on rapid surveillance, counting deaths, and establishing critical health services. A landscape analysis should be done to determine what health systems and infrastructure remain to count the deaths.
Stabilized phase of humanitarian settings	Once lifesaving health services are in place, implementing a MPDSR system should be considered, but the focus should first be on strengthening health systems, and quality of care. Once a system is established, it is essential to institute both death surveillance and quality death reviews. When establishing a MPDSR system, focus should first be on health facilities, and then expand to surveillance and response of community-based deaths.

Refugee humanitarian settings	MPDSR could be implemented to strengthen the general mortality surveillance system, quality of care and referral networks, in line with the above considerations. A collaboration among actors is a key component, especially with the host government. Community engagement and sensitization are fundamental to increase access. MPDSR should be integrated in the national health systems and supported by local outreach services. MPDSR documentation of the host government should be used where available to enable integrated information management. Where not available, alternative standardized forms such as the UNHCR standard Maternal Death Review forms could be considered.

Considerations:

1. MPDSR cannot be applied uniformly in all phases of the humanitarian settings – any mortality surveillance system must be contextualized.
2. MPDSR should be flexible, simple, cost effective, and easy to implement.
3. Strengthening of health systems is crucial. Quality of MPDSR depends on the quality of the care and a strong functional health system. Good management and supportive supervision are needed for a robust health system.
4. Coding system needs to be simplified. Staff should be well trained in data management/analysis.
5. MPDSR should be implemented in stages, in partnership with the host government, camp management, other stakeholders, and organizations operating at the situation.
6. A MPDSR system is only successful if recommendations can be implemented. Therefore, focus in humanitarian settings should be on the response. If resources allow, MPDSR may then be used as a complementary component to strengthen the response.

What is the outcome?

Greater accountability and improved quality of care for women and newborns in humanitarian and fragile settings.

Relevant tools, forms and additional resources

- Blanche Greene-Cramer et al. Systematic Identification of Facility-Based Stillbirths and Neonatal Deaths Through the Piloted Use of an Adapted RAPID Tool in Liberia and Nepal. Plos One 2019
- Andrew T. Boyd et al. Use of Rapid Ascertainment Process for Institutional Deaths (RAPID) to identify pregnancy-related deaths in tertiary-care obstetric hospitals in three departments in Haiti. BMC, 2017
- UNHCR. Maternal Death Review Form and Guide, 2020.
- Tappis, H., Ramadan, M., Vargas, J. et al. Neonatal mortality burden and trends in UNHCR refugee camps, 2006–2017: a retrospective analysis. BMC Public Health 21, 390 (2021)

MODULE 10
Overcoming the blame culture of MPDSR

Module 10: Overcoming the blame culture of MPDSR

What is the purpose of this module?

The purpose is to provide a basic framework for understanding and overcoming the "No Name, No Blame and No Shame" culture for Maternal and Perinatal Death Surveillance and Response (MPDSR), to highlight key strategies for addressing blame, and to identify key resources relating to blame culture.

How is it done?

Understanding the blame culture

The concept of "No Name, No Blame and No Shame" is considered essential for successful implementation of MPDSR. It relates to basic ethical principles that need to be maintained in order for the process to work effectively. These principles include **confidentiality, anonymity and respect**. Failure to implement MPDSR in a "No Name, No Blame and No Shame" environment can result in a variety of consequences. When confidentiality and anonymity are breached, such as when the names of health-care workers and patients involved in cases are shared, this can lead to demoralization and demotivation of health-care workers. The lack of anonymity can lead to punishment of the health-care workers concerned – including with litigation, imprisonment and even violence from the community. When health workers fear these consequences, the situation can lead to a lack of transparency – such as misclassification, or underreporting of deaths, or unnecessary referrals. It can also result in reviews not being conducted properly in order to collectively avoid blame. Health-facility staff may fear punitive action towards their facility from higher levels of health-system management – such as less support or reduced allocations to the facility. A blame culture may lead to weakening of health systems and of community trust in the health-care system.

The organizational climate and culture of MPDSR, including elements of blame, were key implementation factors identified in a recent scoping review on MPDSR in low- and middle-income countries.[1] The findings from the review highlighted the complexity of blame, including different reasons for it and the different forms it takes. The review also found that lessons on blame and the implementation climate have changed little in the past two decades, indicating the need for this module to help strengthen "No Name, No Blame and No Shame" MPDSR.

Understanding "No Name, No Blame and No Shame" MPDSR requires consideration of factors at the multiple levels of the health system, as originally proposed by Lewis (2014),[2] namely:

1. **A supportive policy and political environment (macro level)** whereby national policies are needed to initiate and support implementation, including guidelines as well as legal and other protective frameworks. Political priority for maternal and newborn survival and health also facilitates a more supportive policy process, with corresponding investment in the resources required to deliver quality services.
2. **The organizational culture (meso level)** whereby the institutional work environment/climate influences implementation. For example, a proactive ethos that promotes learning as a critical part of quality improvement can shape a health facility's organizational culture. Lewis calls this supportive institutional behaviour.[2]

3. **The individual responsibility for, and ownership of, the process (micro level)** whereby health workers embrace life-long learning and positive attitudes towards behaviour change in order to improve their practice.[2] The success of MPDSR is in part reliant on the commitment of staff towards conducting the audit themselves, accepting open discussion with peers to improve maternal and perinatal health, taking forward the actions recommended and being willing to "self-correct".[3–5]

At the meso and micro levels, reasons why a "name, blame and shame culture" may exist include the lack of clarity around the process when first implemented,[3,6,7] defensiveness and other issues concerning record-keeping, the existing organizational culture (e.g. staff hierarchies), and the quality of leadership and facilitation of review meetings.[1] The most common issues at a micro level relate to persons feeling threatened during the review meetings and fearing legal action or punitive repercussions.[1] The lack of management, communication and coordination across teams (including non-functioning teams), and health worker emotional fatigue and burnout due to the disrespect health workers face can further contribute to a culture of blame. The negative influence of professional hierarchies between health cadres can silence the more junior staff and especially nurse-midwives,[8,9] and may even result in demotivating personnel from participating in MPDSR in some contexts. Structural hierarchies may also constrain the process when management or senior team members do not buy into or engage in the process, thus preventing more junior staff from taking actions forward. Community awareness and engagement, when appropriate, also strengthens collective ownership and responsibility, and improves quality of care.[10] Regular feedback of results to communities and the subnational level also ensures accountability and promotes sustainability.[1,8]

At the macro level, a strong MPDSR legal framework can reduce perceived fear among health workers.[7,11,12] National political commitment and government ownership can result in increased pressure to implement MPDSR as countries aim to meet global and regional commitments and development goals.[8,13,14] Research describes the fear of litigation as both a positive influence on MPDSR implementation as a form of accountability,[15–18] as well as a negative influence that leads to a rise in avoidable medical interventions.[19]

Strategies to minimize the blame culture

"No Name, No Blame and No Shame" MPDSR functions well in settings with a culture of accountability, learning and improvement. A culture of trust is nurtured by strong leadership and continuous re-assurance of a "blame-free culture".[6,8,20,21] Open and enabling environments, which encourage active participation of all participants during meetings, are reported to improve implementation.[22–24]

This module highlights for consideration 10 key strategies to minimize fear and blame. These strategies have been identified in the literature and through experiential evidence. Annex 1 provides more information about each of these strategies, as well as related resources where more information and country experiences can be found.

10 key strategies:

1. **Ensure that policy and planning for MPDSR** includes national guidelines that explain how to conduct "No Name, No Blame and No Shame" MPDSR, as well as policies for death notification requirements and legal protection for individual staff and health departments. MPDSR implementation tools that describe national guidelines and policies need to be made available at all levels of the health system. Legal frameworks may draw distinctions between the MPDSR process and appropriate disciplinary action to ensure that the information generated as part of the MPDSR process will not be used for litigation purposes. Find out more from the experience in Kenya (Smith et al., 2017).[25]

2. **Ensure national prioritization** of the prevention of maternal and perinatal deaths, leading to positive promotion and use of MPDSR. Global, regional and national commitments to mortality reduction, including mortality targets in national health plans, can result in national authorities putting more pressure on the health system to deliver outcomes. This additional pressure may lead health workers to fear the occurrence of a death and can compromise accurate reporting and individual willingness to

participate in the audit process. Efforts must be made to consider the political context of implementing MPDSR and strategies should be put in place to protect heath workers. Political priority for maternal and newborn health can also lead to increased funding for improving health outcomes, benefitting the response and actions identified through MPDSR. Find out more from the experience in Ethiopia (Melberg et al., 2019; Tura et al., 2020).[26,27]

3. **Harmonize MPDSR in routine monitoring systems** to support standardization of the process and strengthen accountability. Harmonizing or integrating MPDSR with routine monitoring systems enables data to be used in real-time to assess issues and avoid blame. Additionally, aligning the different processes of data capture strengthens accountability measures, promotes quality data capture and use, and reduces workload. Learn more from the experience in Bangladesh (Biswas, 2017)[28] and India (Purandare et al., 2014).[29]

4. **Create and advocate for an enabling environment for implementation of MPDSR** with "No Name, No Blame and No Shame", including an overall organizational culture of learning, accountability and transparency. An enabling environment requires adequate human and material resources across the health system and functional coordinating mechanisms. Open and enabling environments encourage active participation of all participants during meetings and improves implementation. Quality improvement strategies, including data quality assessments, foster a system of data use for decision-making. Promoting MPDSR as a learning experience and ensuring anonymity mitigate blame. Reviewing success stories as well as adverse outcomes can also build team morale. Find out more from the experience in South Africa (Belizan et al., 2011)[20] and Senegal (Dumont et al., 2009).[30]

5. **Strengthen leadership** within all participating professional groups at all levels and ensure engagement with the MPDSR focal point on how to facilitate meetings and mentor others. A good chairperson of a review meeting is someone who is able to steer the conversation in a direction that is blame-free and productive. Leadership also includes participation of senior staff in meetings and in the data analysis in order to guide priorities and actions. Champions or engaged leaders are highly motivated persons who also serve as mentors and in supportive supervisory roles. Find out more from the experience in South Africa (Rhoda et al., 2014)[31] and Malawi (Bakker et al., 2011).[16]

6. **Nurture team relationships** among those who participate in the audit through continuous engagement, a teamwork approach, support from hospital management, and through deliberate efforts and strategies such as mentorship. In contexts where a teamwork approach to implementing MPDSR is adopted, there is consensus, inclusiveness, monitoring of staff performance, delegation of responsibility and continuity of the MPDSR implementation processes. Strong communication, involvement and support from hospital management also strengthen team relationships for MPDSR. Find out more from the experience in Ghana (Dartey, 2012)[24] and India (Purandare et al., 2014).[29]

7. **Ensure that audit meetings take place regularly** with a multidisciplinary group of staff. Holding regular meetings is an important element of integrating MPDSR into routine practice. The more frequently people attend review meetings, the more practice they have, the less blame is experienced and the more embedded the process becomes. Participation in the MPDSR process of all cadres of health workers involved in the care of women and newborns, including junior and senior team members, creates ownership of the process by staff, reduces hierarchies and blame, and enhances the analysis of information. Provision of organizational incentives such as refreshments, extra training or financial motivations may strengthen overall implementation efforts. Box 1 contains some guiding principles for conducting review meetings. Find out more from the experience in Rwanda (Tayebwa et al., 2020)[32] and Zimbabwe (MCSP, 2017).[17]

8. Put in place **a code of conduct or "audit charter"** with clear rules on the purpose of meetings, expected behaviour during meetings and the confidentiality of meetings. Official codes of conduct or audit charters may minimize acrimony and prevent (or reduce) blame and recriminations. In some settings, a code of conduct would be a signed or verbally agreed non-disclosure confidentiality agreement (See Box 2 for examples). Find out more from the experience in Burkina Faso (Richard et al., 2009; Congo et al., 2017)[33,34] and Ghana (Dartey, 2012).[24]

9. Promote **individual awareness** of roles, responsibilities and competence to complete tasks through on-the-job capacity-development linked to implementing "No Name, No Blame and No Shame" MPDSR. The staff engaged in MPDSR must be aware of their role in implementing the "No Name, No Blame and No Shame" process, and must understand the purpose of the process. The hierarchical nature of meetings may demotivate personnel from participating in the process in some contexts. Lack of personal accountability for an honest process can also lead to responsibility being shifted to other staff, resulting in blame and shame experiences. Find out more from the experience in Tanzania (Armstrong et al., 2014),[35] Morocco (Muffler et al., 2007)[36] and South Africa (Belizan et al., 2011).[20]

10. **Engage communities in awareness** about reporting and participation in MPDSR verbal and social autopsies. Building community awareness and community sensitization around the MPDSR process may reduce blame and create an enabling environment for implementation of MDSPR at community level (Box 3). Find out more from the experience in Bangladesh (Biswas et al., 2016; Biswas et al., 2015).[37,38]

A framework for promoting a positive implementation culture for MPDSR

To help implement a "No Name, No Blame and No Shame" culture of MPDSR, this module presents an adapted framework for understanding the MPDSR cultural environment which includes many elements of the health system. This framework was adapted from the original framework of the cultural environment of maternal death and near-miss reviews presented by Lewis (2014),[2] further investigated,[39,40] and vetted by experts working on MPDSR.

Figure 4 provides a visual of the framework for promoting a positive implementation culture for MPDSR. As shown, addressing blame requires action at all levels of the health system. The 10 strategies can be implemented at various levels and thus surround the three health-system levels. The framework shows that issues of blame and shame cut across the three levels and that the strategies are interlinked.

Fig. 4. Framework for promoting a positive implementation culture for MPDSR

Future research needs to go beyond identifying blame as a barrier to understanding how to create a culture of accountability, learning and improvement which can be achieved through strengthening leadership, improving teamwork and communication, and driving motivation while considering context. Key research gaps include understanding individual perspectives on overcoming barriers to creating a culture of accountability, learning and improvement.

> The purpose of reviewing a maternal or perinatal death is to give value to that life and collectively learn from the experience, and NOT to blame individuals or institutions.

What is the outcome?

The outcome of implementing the strategies presented in this module is the creation of an environment where health-care professionals feel confident in conducting MPDSR with a "No Name, No Blame and No Shame" approach. A positive implementation culture for MPDSR will contribute to the reduction of preventable maternal and perinatal deaths by improving the quality of care and reducing barriers to care.

Acknowledgements

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Example of principles of facility-based case review meetings to ensure no blame

Key principles:

- Meetings should be multidisciplinary and interactive. They should not be didactic. This is best achieved with participants sitting in a circle.
- Meetings should be held on a regular basis and during protected time reserved for staff attendance.
- Administrators and others who can act on the recommendations should be present.

Example meeting agenda:

1. Read and agree code of conduct.
2. Re-evaluate the recommendations of previous sessions and provide a short follow-up of actions decided at the last meeting. Identify any further action required.
3. Present the clinical summary of case(s).
4. Conduct a systematic case review, using a common template and with reference to any clinical guidelines or standards available.
5. Prepare a case analysis and local recommendations.
6. Plan for implementation.
7. Prepare a case analysis and a report to be sent to the overall steering committee for the wider review programme, if one exists.
8. Provide feedback on general findings and recommendations to staff who could not attend and to hospital administrators.

Source: Lewis G. Emerging lessons from the FIGO LOGIC initiative on maternal death and near-miss reviews. Int J Gynaecol Obstet. 2014;127(Suppl 1):S17–20.

Examples of audit charter or non-disclosure agreements

A) Generic example

Non-disclosure confidenitality agreement

We, the members of the ---- review committee, agree to maintain anonymity and confidentiality for all the cases discussed at this meeting, held on [DATE]. We pledge not to talk to anyone outside this meeting about details of the events analysed here, and will not disclose the names of any individuals involved, including family members or health-care providers.

B) Example from Burkina Faso

Audit charter for the maternity unit of the district hospital *Secteur 30*

The medical audit consists in a systematic and critical analysis of the quality of care by comparison to defined standards (norms and care protocols). It enables the members of a team to discuss and question or improve certain practices. The audit must never be used to sanction a member of staff. Its purpose is to propose recommendations and actions aimed at avoiding in future the deficiencies or errors observed.

We, staff of the maternity of the hospital *Secteur 30*, promise to respect the rules of good practice that follow:

1. To arrive on time for audit sessions.
2. To respect the statements and ideas of everyone.
3. To respect the confidentiality of the team discussions. Information and problems raised during the audit must not be communicated outside the team (friends, relatives, colleagues in other health departments, etc.).
4. To participate actively in the discussions.
5. To accept discussion and debate among participants without verbal violence.
6. To refrain from hiding or falsifying information that could be useful in understanding the case being audited.
7. To try as much as possible (because it is not easy) to accept questioning of one's own actions.

Staff of the maternity department, Ouagadougou, 25 February 2004

Source: Richard F, Oue´draogo C, Zongo V, Ouattara F, Zongo S, Grue´nais M, De Brouwere V. The difficulty of questioning clinical practice: experience of facility-based case reviews in Ouagadougou, Burkina Faso. BJOG. 2009;116:38–44.

Engaging the community to prevent blame

Community awareness, sensitization and engagement around the MPDSR process can reduce blame and improve implementation. The blame culture at the community level can work in many ways. Health care workers may be blamed by women, their families and the community after a death; likewise women, their families or even communities may be blamed for deaths related to delaying care.[26,41] Promoting a collaborative partnership approach to the MPDSR process can be established by facilitating dialogue between community members, health care providers and managers to build trust and form learning communities. Successful community consultation and engagement on the response portion of MPDSR has shown to improve implementation of actions in some settings.[8,15,42,43] Breaking down barriers associated with blame is especially important to strengthen community engagement around data collection of deaths in the community.[7,44,45] In addition, those implementing MPDSR need to acknowledge and accommodate for the strong emotions associated with death, such as grief and anger. As such, the actors (both community and health care providers) need to be empathetic in validating and carefully managing these emotions by providing support to the bereaved families, such as psychosocial support relevant to the context.

Relevant tools, forms and additional resources

- Ten strategies for promoting a "No Name, No Blame and No Shame" culture and key resources with more information (Annex 18)

References

1. Kinney MV, Walugembe DR, Wanduru P, Waiswa P, George A. Maternal and perinatal death surveillance and response in low- and middle-income countries: a scoping review of implementation factors. *Health policy and planning* 2021; 36(6): 955–973.
2. Lewis G. The cultural environment behind successful maternal death and morbidity reviews. *Bjog* 2014; 121 Suppl 4: 24–31.
3. van Hamersveld KT, den Bakker E, Nyamtema AS, et al. Barriers to conducting effective obstetric audit in Ifakara: a qualitative assessment in an under-resourced setting in Tanzania. *Trop Med Int Health* 2012; 17(5): 652–7.
4. Pattinson RC, Say L, Makin JD, Bastos MH. Critical incident audit and feedback to improve perinatal and maternal mortality and morbidity. *Cochrane Database Syst Rev* 2005; (4): CD002961.
5. Johnston G, Crombie IK, Davies HT, Alder EM, Millard A. Reviewing audit: barriers and facilitating factors for effective clinical audit. *Qual Health Care* 2000; 9(1): 23–36.
6. du Châtelet A, Zamboni K, Fornah F, Yilla M, Nam S. Barriers and enablers to the implementation of Maternal Death Reviews to improve quality of care in Sierra Leone. *draft paper* 2019 [unpublished].
7. Agaro C, Beyeza-Kashesya J, Waiswa P, et al. The conduct of maternal and perinatal death reviews in Oyam District, Uganda: a descriptive cross-sectional study. *BMC Womens Health* 2016; 16: 38.
8. Kerber KJ, Mathai M, Lewis G, et al. Counting every stillbirth and neonatal death through mortality audit to improve quality of care for every pregnant woman and her baby. *BMC Pregnancy Childbirth* 2015; 15 Suppl 2: S9.
9. de Kok B, Imamura M, Kanguru L, Owolabi O, Okonofua F, Hussein J. Achieving accountability through maternal death reviews in Nigeria: a process analysis. *Health policy and planning* 2017.
10. Martin Hilber A, Blake C, Bohle LF, Bandali S, Agbon E, Hulton L. Strengthening accountability for improved maternal and newborn health: A mapping of studies in Sub-Saharan Africa. *Int J Gynaecol Obstet* 2016; 135(3): 345–57.

11. Koblinsky M, Kaptiningsih A, Fitriyani. Indonesia: Reducing maternal & perinatal deaths through MPDSR – mapping the possibilities: Draft report for USAID prepared by Management Systems International, 2017.
12. WHO. Study on the implementation of maternal death review in five countries in the South-East Asia Region of the World Health Organization. New Dehli, India: World Health Organization for South-East Asia, 2014.
13. Bandali S, Thomas C, Hukin E, et al. Maternal Death Surveillance and Response Systems in driving accountability and influencing change. *Int J Gynaecol Obstet* 2016; 135(3): 365–71.
14. WHO. Summary report on the regional meeting on maternal death surveillance and response, Rabat, Morocco, 7–9 October 2013. Rabat, Morocco: World Health Organization Regional Office for the Eastern Mediterranean, 2013.
15. Abebe B, Busza J, Hadush A, et al. 'We identify, discuss, act and promise to prevent similar deaths': a qualitative study of Ethiopia's Maternal Death Surveillance and Response system. *BMJ global health* 2017; 2(2): e000199.
16. Bakker W, van den Akker T, Mwagomba B, Khukulu R, van Elteren M, van Roosmalen J. Health workers' perceptions of obstetric critical incident audit in Thyolo District, Malawi. *Trop Med Int Health* 2011; 16(10): 1243–50.
17. MCSP. Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Zimbabwe. Washington, DC: Maternal Child Survival Program, 2017.
18. Melberg A, Teklemariam L, Moland KM, Aasen HS, Sisay MM. Juridification of maternal deaths in Ethiopia: a study of the Maternal and Perinatal Death Surveillance and Response (MPDSR) system. *Health policy and planning* 2020; 35(8): 900–5.
19. Betran AP, Temmerman M, Kingdon C, et al. Interventions to reduce unnecessary caesarean sections in healthy women and babies. *Lancet* 2018; 392(10155): 1358–68.
20. Belizan M, Bergh AM, Cilliers C, Pattinson RC, Voce A, Synergy G. Stages of change: A qualitative study on the implementation of a perinatal audit programme in South Africa. *BMC Health Serv Res* 2011; 11: 243.
21. Grellier R, Shome P. FIGO Saving mothers and newborn project: Summary evaluation: Options, 2011.
22. MCSP. Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Nigeria. Washington, DC: Maternal Child Survival Program, 2017.
23. Kinney MV, Ajayi G, de Graft-Johnson J, et al. "It might be a statistic to me, but every death matters.": An assessment of facility-level maternal and perinatal death surveillance and response systems in four sub-Saharan African countries. *PloS one* 2020; 15(12): e0243722.
24. Dartey AF. The role of midwives in the implementation of maternal death review (MDR) in health facilities in Ashanti region, Ghana. Cape Town: University of the Western Cape; 2012.
25. Smith H, Ameh C, Godia P, et al. Implementing Maternal Death Surveillance and Response in Kenya: Incremental Progress and Lessons Learned. *Global health, science and practice* 2017; 5(3): 345–54.
26. Melberg A, Mirkuzie AH, Sisay TA, Sisay MM, Moland KM. 'Maternal deaths should simply be 0': politicization of maternal death reporting and review processes in Ethiopia. *Health policy and planning* 2019; 34(7): 492–8.
27. Tura AK, Fage SG, Ibrahim AM, et al. Beyond No Blame: Practical Challenges of Conducting Maternal and Perinatal Death Reviews in Eastern Ethiopia. *Global health, science and practice* 2020; 8(2): 150–4.
28. Biswas A. Shifting paradigm of maternal and perinatal death review system in Bangladesh: A real time approach to address sustainable developmental goal 3 by 2030. *F1000Res* 2017; 6: 1120.
29. Purandare C, Bhardwaj A, Malhotra M, Bhushan H, Shah PK. Every death counts: electronic tracking systems for maternal death review in India. *Int J Gynaecol Obstet* 2014; 127 Suppl 1: S35–9.
30. Dumont A, Tourigny C, Fournier P. Improving obstetric care in low-resource settings: implementation of facility-based maternal death reviews in five pilot hospitals in Senegal. *Hum Resour Health* 2009; 7: 61.

31. Rhoda NR, Greenfield D, Muller M, et al. Experiences with perinatal death reviews in South Africa--the Perinatal Problem Identification Programme: scaling up from programme to province to country. *Bjog* 2014; 121 Suppl 4: 160–6.

32. Tayebwa E, Sayinzoga F, Umunyana J, et al. Assessing Implementation of Maternal and Perinatal Death Surveillance and Response in Rwanda. *International journal of environmental research and public health* 2020; 17(12).

33. Richard F, Ouedraogo C, Zongo V, et al. The difficulty of questioning clinical practice: experience of facility-based case reviews in Ouagadougou, Burkina Faso. *Bjog* 2009; 116(1): 38–44.

34. Congo B, Sanon D, Millogo T, et al. Inadequate programming, insufficient communication and non-compliance with the basic principles of maternal death audits in health districts in Burkina Faso: a qualitative study. *Reprod Health* 2017; 14(1): 121.

35. Armstrong CE, Lange IL, Magoma M, Ferla C, Filippi V, Ronsmans C. Strengths and weaknesses in the implementation of maternal and perinatal death reviews in Tanzania: perceptions, processes and practice. *Trop Med Int Health* 2014; 19(9): 1087–95.

36. Muffler N, Trabelssi Mel H, De Brouwere V. Scaling up clinical audits of obstetric cases in Morocco. *Trop Med Int Health* 2007; 12(10): 1248–57.

37. Biswas A, Rahman F, Eriksson C, Halim A, Dalal K. Facility Death Review of Maternal and Neonatal Deaths in Bangladesh. *PloS one* 2015; 10(11): e0141902.

38. Biswas A, Halim MA, Dalal K, Rahman F. Exploration of social factors associated to maternal deaths due to haemorrhage and convulsions: Analysis of 28 social autopsies in rural Bangladesh. *BMC Health Serv Res* 2016; 16(1): 659.

39. George A, al. e. Lenses and levels: the why, what and how of measuring health system drivers of women's, children's and adolescents' health with a governance focus. *BMJ global health* 2019 4(Suppl 4).

40. Kinney MV, Walugembe DR, Wanduru P, Waiswa P, George AS. Implementation of maternal and perinatal death reviews: a scoping review protocol. *BMJ open* 2019; 9(11): e031328.

41. E4A. 2012. Maternal death surveillance and response systems: overcoming legal challenges and creating an enabling environment. MDSR Action Network. Presented during 'Interactive MDSR Resource Room' at XXFIGO World Congress of Gynecology and Obstetrics, Rome, Italy, 7-12 October 2012.

42. Hofman JJ, Mohammed H. Experiences with facility-based maternal death reviews in northern Nigeria. *Int J Gynaecol Obstet* 2014; 126(2): 111–4.

43. Kongnyuy EJ, Leigh B, van den Broek N. Effect of audit and feedback on the availability, utilisation and quality of emergency obstetric care in three districts in Malawi. *Women and birth : journal of the Australian College of Midwives* 2008; 21(4): 149–55.

44. Kerber KJ, Mathai M, Lewis G, et al. Counting every stillbirth and neonatal death to improve quality of care for every pregnant woman and her baby. *BMC Preg Childbirth* 2015; 15(Suppl 2)(S9).

45. Mogobe KD, Tshiamo W, Bowelo M. Monitoring maternity mortality in Botswana. *Reprod Health Matters* 2007; 15(30): 163–71.

List of resources

Links provided where available.

Module 1

- MDSR technical guide glossary (page 66)
- The WHO application of ICD-10 to maternal deaths during pregnancy, childbirth and puerperium: ICD-MM
- WHO application of ICD-10 to deaths during the perinatal period: ICD-PM
- Standards and reporting requirements related for maternal mortality. In: ICD-11 Reference guide, Part 2 [website]. Geneva: World Health Organization; 2019
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 3, Session 2
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 1, Session 4
- WHO and UNICEF Analysis and use of health facility data guidance for RMNCAH programme managers
- DHIS2 website
- CRVS website

Module 2

- Situation mapping tool (Annex 1)
- Sample terms of reference for review committee (Annex 2)
- Sample meeting code of practice (Annex 3)
- Sample information flow chart (Annex 4)
- MPDSR integrated review meeting minutes and action items form (Annex 5)
- MDSR technical guide chapter: Development of an MDSR implementation plan
- MDSR technical guide: Committee worksheet (MDSR A6)
- Making every baby count guide: Meeting code of practice
- Making every baby count guide: Meeting minutes and action items form
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 2, Session 2
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 1, Session 6; and 7
- Video clip: Setting up a review committee.

Module 3

- Where to Look tool for identifying facility maternal and perinatal deaths (Annex 7)
- MDSR technical guide chapter: Identification and notification of maternal deaths
- MDSR technical guide appendix 7: Community identification for suspected maternal deaths, page 114
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 1, Session 5

- UNICEF Skill building on perinatal death reviews guide and presentation, Day 1, Session 5
- Ayele B, Gebretnsae H, Hadgu T, Negash D, G/silassie F, Alemu T, et al. Maternal and perinatal death surveillance and response in Ethiopia: Achievements, challenges and prospects. Biswas A, editor. PLoS One [Internet]. 2019 Oct 11;14(10):e0223540. Available from: http://dx.plos.org/10.1371/journal.pone.0223540

Module 4

- MPDSR – Facility monthly summary form and instructions to complete it (Annex 8 and 9)
- Maternal death case review form and instructions to complete it (Annex 10 and 11)
- Stillbirth and neonatal death review form and instructions to complete it (Annex 12 and 13)
- Minimum perinatal data set (Annex 14)
- MDSR technical guide chapter: Identification and notification of maternal deaths
- MDSR technical guide appendix: Types of facility information to collect (A3)
- MDSR technical guide (Appendix 4) Draft of community autopsy tool for maternal deaths, page 73
- Making every baby count guide: Stillbirth and neonatal death review form, page 71
- Making every baby count guide: Births and deaths summary form, page 82
- Making every baby count guide: Minimum set of perinatal indicators, page 87
- Making every baby count guide: Approaches for classifying modifiable factors, page 92. Video on audit and neonatal deaths
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 2, Session 3
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 1, Session 5
- Virtual Public Health Campus on Surveillance and Response in the case of maternal and perinatal death (MPDSR)
- MPDSR Training of Trainers package

Module 5

- MPDSR integrated review meeting minutes and action items form (Annex 5)
- MPDSR – Facility monthly summary form and instructions to complete it (Annex 8 and 9)
- Sample information flow chart (Annex 4)
- Sample integrated MPDSR report outline for a single facility (Annex 6)
- MPDSR monitoring framework (Annex 15)
- MDSR technical guide committee worksheet
- Making every baby count guide: Meeting code of practice
- Making every baby count guide: Meeting minutes and action items form
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 2, Session 2
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 1, Session 6 and 7

Module 6

- MPDSR monitoring framework (Annex 15)
- MDSR technical guide chapter: Data aggregation and interpretation

- MDSR technical guide chapter: Analysis
- MDSR technical guide appendix: Steps to completing the committee worksheet (A6)
- Making every baby count guide: Sample calculations for reporting, page 99
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 3, Session 3
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 2, Session 3
- MPDSR Action Tracker tool, Options Consultancy Services ltd
- Open-source software: the South African Perinatal Problem Identification Programme

Module 7

- MPDSR integrated review meeting minutes and action items form (Annex 5)
- MDSR technical guide chapter: Response
- MDSR technical guide chapter: Dissemination of results
- MDSR technical guide appendix: Implementation planning tool (A8)
- Making every baby count guide: approaches for classifying modifiable factors, meeting minutes and action plan and fishbone diagram, page 102
- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 3, Session 2
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 2, Session 4
- Knowledge Brief: Implementation of Maternal and Perinatal Death Surveillance and Response as part of the Quality of Care efforts for Maternal and Newborn Health: Considerations for synergy and alignment
- Bandali, S., Thomas, C., Wamalwa, P., Mahendra, S., Kaimenyi, P., Warfa, O., & Fulton, N. (2019). Strengthening the "p" in Maternal and Perinatal Death Surveillance and Response in Bungoma county, Kenya: Implications for scale-up. BMC Health Services Research, 19(1), 1–10. https://doi.org/10.1186/s12913-019-4431-4
- Marston, C., Hinton, R., Kean, S., Baral, S., Ahuja, A., Costello, A., & Portela, A. (2016). Community participation for transformative action on women's, children's and adolescents' health. Bulletin of the World Health Organization, 94(5), 376–382. https://doi.org/10.2471/BLT.15.168492
- Melberg, A., Mirkuzie, A. H., Sisay, T. A., Sisay, M. M., & Moland, K. M. (2019). "Maternal deaths should simply be 0": Politicization of maternal death reporting and review processes in Ethiopia. In Health Policy and Planning (Vol. 34, Issue 7). https://doi.org/10.1093/heapol/czz075
- Renedo, A., Komporozos-Athanasiou, A., & Marston, C. (2018). Experience as Evidence: The Dialogic Construction of Health Professional Knowledge through Patient Involvement. Sociology, 52(4), 778–795. https://doi.org/10.1177/0038038516682457
- WHO. (2017). WHO community engagement framework for quality, people-centred and resilient health services.

Module 8

- MPDSR monitoring framework (Annex 15)
- Common measures for monitoring MPDSR across countries (Annex 16)
- Indicator catalogue for monitoring MPDSR at health facility, district/regional and national levels (Annex 17)
- MDSR technical guide chapter: Monitoring and evaluation of the MDSR system
- MCSP tools for assessing MPDSR processes in facilities and subnational level

- Maternal and Child Survival Program (MCSP) MDSR workshop facilitator guide, Day 3, Session 3
- UNICEF Skill building on perinatal death reviews guide and presentation, Day 2, Session 5

Module 9

- Blanche Greene-Cramer et al. Systematic Identification of Facility-Based Stillbirths and Neonatal Deaths Through the Piloted Use of an Adapted RAPID Tool in Liberia and Nepal. Plos One 2019
- Andrew T. Boyd et al. Use of Rapid Ascertainment Process for Institutional Deaths (RAPID) to identify pregnancy-related deaths in tertiary-care obstetric hospitals in three departments in Haiti. BMC, 2017
- UNHCR. Maternal Death Review Form and Guide, 2020.
- Tappis, H., Ramadan, M., Vargas, J. et al. Neonatal mortality burden and trends in UNHCR refugee camps, 2006–2017: a retrospective analysis. BMC Public Health 21, 390 (2021)

Module 10

- Ten strategies for promoting a "No Name, No Blame and No Shame" culture and key resources with more information (Annex 18)

Annexes

Annexes

Annex 1: Situation mapping tool

Before undertaking MPDSR, complete this tool to assess the current landscape of relating to mortality audit and quality improvement systems in your facility or district.

Item	Yes	No	Unsure	Main person or position responsible	Description
Committees or teams					
Quality improvement					
Maternal death review (frequency of meeting, availability of registers and minutes)					
Perinatal death review (frequency of meeting, availability of registers and minutes)					
Other (e.g. child, near-miss)					
Documentation (available at level of review)					
Death certification					
Maternal death notification					
If yes, time period for notification:					
Perinatal death notification					
If yes, time period for notification:					
Perinatal death certificate					
Birth certificate					
Paper-based birth register					
Electronic birth register					
Paper-based postnatal register					
Electronic postnatal register					
Maternal death review forms					
Perinatal death review forms					
Births and deaths captured in HMIS					
Births and deaths notified to civil authority					
Burial permits					
Other forms, [FILL IN]					
Community surveillance					
Community outreach from facility					
Community birth register					
Maternal death data collection					
Stillbirth data collection					
Neonatal death data collection					
Verbal autopsy tools					
Social autopsy tools					
Other resources					
Legal protection for staff					
Confidentiality agreements					
[FILL IN]					
[FILL IN]					
[FILL IN]					

Annex 2: Sample terms of reference for review committee

Purpose

Reducing maternal and perinatal deaths is a priority for this health facility, in accordance with local, national and global goals. Recognizing that the primary aim of MPDSR is action that results in improved quality of care, the purpose of the MPDSR review committee is to coordinate an effective review of maternal deaths, stillbirths and neonatal deaths, and to oversee implementation of the recommendations arising from these reviews.

Authority

The committee may decide or advise on appropriate corrective and other actions, which may be required to reduce mortality and improve quality of care.

Membership

Describe the core, ad hoc and other members of the MPDSR review committee. Stress the importance of multidisciplinary membership.

Duties & Responsibilities

- coordinate meetings at a specified frequency;
- ensure that all relevant health information and data are made available for such meetings;
- monitor trends in births and deaths, and other relevant data;
- ensure that actions arising from recommendations are implemented and communicated;
- work collaboratively with other quality improvement mechanisms and other key partners within the facility;
- promote a no-blame environment for mortality review;
- consider the relevance of MPDSR activities to other levels of the health system and share findings as mandated;
- ensure attendance of key stakeholders;
- ensure confidentiality;
- coordinate the creation and dissemination of summary reports as required.

Procedural Issues

Describe decisions made in regards to:

- frequency of meetings
- meeting roles (e.g. chairperson, secretary)
- quorum
- adherence to a meeting code of conduct
- completion and distribution of meeting minutes (maximum 3 working days).

Review

The terms of reference and committee processes will be reviewed every year, or sooner should the need arise.

Annex 3: Sample meeting code of practice

(Adapted from *Making every baby count audit and review of stillbirths and neonatal deaths*. Annex 6, page 98 (WHO, 2016)).

Code of practice

To show respect for the babies and families we are responsible for looking after, we, the staff of _____ [name of facility], agree to respect the rules of good conduct during meetings where cases of deaths that have occurred in our facility are reviewed We understand and appreciate that the results of these meetings will not result in punitive measures. The rules of our stillbirth and neonatal mortality audit meetings include:

- arrive on time to the audit meetings;
- participate actively in discussions;
- respect everyone's ideas and ways of expressing them;
- accept discussion and disagreement without resorting to verbal abuse;
- respect the confidentiality of the discussions that take place during the meetings;
- agree not to hide useful information or falsify information that could provide insight into the case(s) under review; and
- try as much as possible (recognizing that it is not easy) to accept that your own actions can be questioned

Signed: _____ Date: _____

Signed: _____ Date: _____

Signed: _____ Date: _____

Signed: _____ Date: _____

Signed: _____ Date: _____

Signed: _____ Date: _____

Annex 4: Sample information flow chart

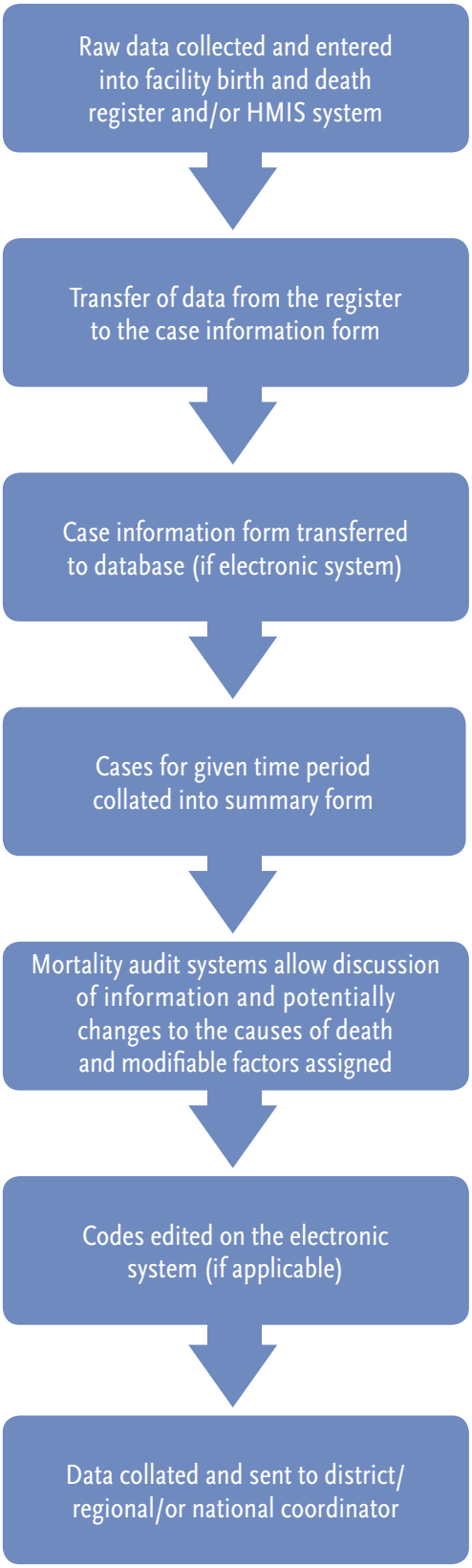
The MPDSR committee should establish a data flow chart, which can be used to assign responsibility to named people along the path of data collection.

Data from facility registers and patient charts can be transferred to maternal or perinatal case information forms in preparation for mortality review meetings.

In addition, the information for a given time period can be summarized in a single form.

These pieces of information are for the use of the MPDSR committee and should not be shared outside the review committee unless there is clear written agreement on the use and dissemination of the information.

Meeting minutes and reports that come out of the meetings can be shared, and also be collated and linked back to other information systems, including the Health Management Information System (HMIS), as well as Civil Registration and Vital Statistics (CRVS).



Annex 5: MPDSR integrated review meeting minutes and action items form

Institution: _____

Date of meeting: _____ **Start time:** _____ **End time:** _____

Meeting chairperson: _____

Period of time under review (e.g. week, month): _____

Statistics for the above time period:

Number of women booked / registered:	Number of births:	Number of live births:
Number of preterm births (<37 weeks):		Preterm birth rate (divide number by total births and multiply by 100): %
Number of low birth weight babies <2500g:		Low birth weight rate (divide number by live births and multiply by 100): %
Number of caesarean sections:		Caesarean section rate (divide number by total births and multiply by 100): %
Number of complicated deliveries (breech, multiple, vacuum, forceps, etc):		Complication rate (divide number by total births and multiply by 100): %
Number of maternal deaths:		Maternal mortality ratio (divide number by live births and multiply by 100,000):
Number of stillbirths:		Stillbirth rate (divide number by births and multiply by 1000):
Number of intrapartum stillbirths (fetal heart sounds heard on admission):		Proportion of intrapartum stillbirths (divide number by total number of stillbirths and multiply by 100): %
Number of neonatal deaths aged 0–6 days:		Early neonatal mortality rate (divide number by live births and multiply by 1000):
Number of neonatal deaths aged 0–28 days:		Neonatal mortality rate (divide number by live births and multiply by 1000):

Main causes of maternal deaths:

1. _____
2. _____
3. _____

Main causes of stillbirths:

1. _____

2. _____

3. _____

Main causes of early neonatal deaths:

1. _____

2. _____

3. _____

Modifiable factors identified:

1. _____

2. _____

3. _____

Action plans

Modifiable factor identified	**Specific actions to address modifiable factor**	**Responsible person**	**Time frame**	**Follow-up** (this section to be completed at the next meeting)

Add rows as needed

Date of next meeting: _____

Date minutes ratified: _____

Proposed by: _____ **Seconded by:** _____

Chairperson's signature: _____

Steps for minute taking at MPDSR meetings:

1. Use this form to capture the minutes, which should be accompanied by the code of practice declaration signed before each meeting and the attendance register signed at the end of each meeting.
2. The meeting chairperson is responsible for ensuring that the minutes are taken, and that the meeting minutes and action form is completed at the end of the meeting. Do not leave the filling out of the form for a later time. For the minutes to be a functional document, the completion needs to be part of the meeting process.
3. The statistics can be filled in on the form during preparations in advance of the meeting. If more extensive statistics are presented at the meeting, it is optional to attach a copy of the presentation as an addendum to the minutes.
4. Enter a short (e.g. single line) summary about each case presented. For example: "Case No. 13390, 35 y-o with postpartum haemorrhage due to uterine atony", or "Case No. 45368, intrapartum stillbirth 2.5 kg, ruptured uterus". It is not necessary to include a full case report. If requested, case presentations can be attached as an addendum to the minutes.
5. The chairperson should allocate at least 5 minutes at the end of the meeting to summarize the key problems that have been identified during the meeting, based on the presentation of statistics or the cases discussed, or both. Based on these problems, action plans can be drawn up, as outlined in the table on the second page of the form. The task list should be clearly allocated and agreed upon at the meeting.
6. At the end of the meeting, the chairperson should ensure that the minutes form is fully complete, either on paper or electronically. Only the follow-up section of the table should be left blank.
7. Within 72 hours of the meeting, paper-based minutes should be typed up and stored electronically. This should not be a long task if the format of the template is adhered to.
8. The typed minutes should be verified by the chairperson, and then circulated as draft minutes by email to all members on the attendance list for the meeting, as well as to other interested stakeholders and anyone with responsibility for one of the tasks in the action plan. Distribution of the draft minutes should be completed within a week of the date of the meeting.
9. At the subsequent MPDSR meeting, the chairperson should allocate some time for reviewing the draft minutes of the previous meeting, preferably at the start. If a task has not been completed, this should be noted in the follow-up column and the task can be carried over into the action plans table for the current meeting. Once the follow-up column from the minutes of the previous meeting has been filled in, those final minutes can be ratified, with a proposer and a seconder.
10. The meeting can then proceed with new statistics and/or case presentations.

Annex 6: Sample integrated MPDSR report outline for a single facility

Background

- If the report is to be distributed outside the health facility, include background information on the facility, such as the level of care, management structure, number of beds and annual number of deliveries.
- Include details of the timing and types of event covered by the death review.
- Describe the set-up of the committee, the frequency of review meetings, people and departments involved, and the process of review.
- Identify the period under review, and report publication date.
- Include information on the team compiling the report, and a point of contact.

Findings

Summary of pregnancies and births

- Describe current results and differences from the previous review period.

	Number
Pregnancies booked or registered	
Deliveries	
Live births	
Maternal deaths	
Induced abortions (harmonized to local laws)	
Stillbirths (according to local definition)	
Early neonatal deaths (0–6 days)	
Late neonatal deaths (7–28 days)	

Maternal deaths

- Describe current results and differences from the previous review period.
- Describe the number and causes of death.

ICD-MM grouping		Number
Direct	Group 1	
	Group 2	
	Group 3	
	Group 4	
	Group 5	
	Group 6	
Indirect	Group 7	
Unspecified	Group 8	
Coincidental	Group 9[1]	

[1] Total maternal deaths should only be the sum of groups 1 to 8 and NOT include deaths in group 9. Deaths in group 9 are pregnancy-related deaths but not maternal deaths.

Include ICD-MM reference sheet for more information on group classification, or use locally accepted cause of death categories

Stillbirths and neonatal deaths

- Describe current results and differences from the previous review period.
- Describe the number and causes of death.

Births by weight	Antepartum stillbirth	Intrapartum stillbirth	Stillbirth, unknown timing	Early neonatal death	Late neonatal death
< 1000g					
1000–1499 g					
1500–1999 g					
2000–2499 g					
2500 g+					
Weight unknown					

Gestational age	Antepartum stillbirth	Intrapartum stillbirth	Stillbirth, unknown timing	Early neonatal death	Late neonatal death
Extreme preterm < 27+6					
Very preterm 28+0–31+6					
Moderate to late preterm 32+0–36+6					
Term 37+0–41+6					
Post-term > 42+0					
Gestational age unknown					

Type of childbirth	Antepartum stillbirth	Intrapartum stillbirth	Stillbirth, unknown timing	Early neonatal death	Late neonatal death
Cephalic vaginal					
Assisted (forceps, vacuum, breech, destructive procedures)					
Caesarean section					
Unknown					

Antepartum stillbirths	**M1**	**M2**	**M3**	**M4**	**M5**	**other**	**unknown**
a. congenital							
b. antepartum complications							
c. intrapartum complications							
d. complications of prematurity							
e. infection							
f. other							
g. unknown/unspecified							

Intrapartum stillbirths	M1	M2	M3	M4	M5	other	unknown
a. congenital							
b. antepartum complications							
c. intrapartum complications							
d. complications of prematurity							
e. infection							
f. other							
g. unknown/unspecified							
Neonatal deaths	**M1**	**M2**	**M3**	**M4**	**M5**	**other**	**unknown**
a. congenital							
b. antepartum complications							
c. intrapartum complications							
d. complications of prematurity							
e. infection							
f. other							
g. unknown/unspecified							

Include ICD-PM reference sheet for more information on group classification

Background characteristics

- Include specific background characteristics based on local epidemiology (e.g. syphilis, HIV status), or information relevant to the facility (e.g. where the deaths occurred, referral status, neighbourhood of patient).

Maternal age	Maternal death	Antepartum stillbirth	Intrapartum stillbirth	Stillbirth, unknown timing	Early neonatal death	Late neonatal death
< 18y						
18–19y						
20–34y						
> 35y						
Unknown						

Modifiable factors

- description and trends in modifiable factors.
- actions taken to address identified modifiable factors.

Recommendations and plans for action

- Review completed and outstanding recommendations from previous reports.
- Highlight recommendations that are not being implemented, and those that have encountered delays, and provide a revised plan for implementation or reassessment.
- Identify new recommendations and the plan to take action.
- Consider including a success story of a recommendation leading to sustained change in practice.

Annex 7: Where to Look tool: to identify maternal and perinatal deaths

Maternal deaths

Daily check of logs from (to be defined locally):

- gynaecology ward (maternal deaths in early pregnancy due to abortion complications and maybe extrauterine pregnancies);
- antenatal ward;
- obstetric ward;
- postnatal ward;
- adult or women's ward;
- emergency department;
- intensive care units;
- surgery;
- operating theatre or anaesthesiology register;
- mortuary;
- outpatient clinic;
- community log (if available).

Note: Any death of a woman of reproductive age should trigger a review of her medical record to look for evidence that she could have been pregnant, or within 42 days of the end of a pregnancy.

Stillbirth and neonatal deaths

Daily check of logs from:

- antenatal ward
- obstetric ward
- postnatal ward
- Special Care Baby Unit/NICU
- pediatric ward
- mortuary
- outpatient clinic
- community log (if available).

Annex 8: MPDSR – Facility monthly summary form

SECTION 1: IDENTIFICATION

1.1 Data collected at (facility name):

1.2 Data for the month of:

1.3 District name:

1.4 Pregnancies, abortions, births, maternal, perinatal & neonatal deaths

	Total pregnancies	**Total live births**	**Total maternal deaths[2]**	**Total abortions**	**Total stillbirths**	**Total neonatal deaths**
	Total births (incl. deaths)	Stillbirths (SB)			Neonatal deaths	
Births by weight		Antepartum SB	Intrapartum SB	Unknown SB	Early	Late
< 1000 g						
1000–1499 g						
1500–1999 g						
2000–2499 g						
2500 g+						
weight unknown						

1.5 Multiple pregnancies _____ babies from _____ pregnancies

1.6 Born before arrival _____ total

1.7	Mode of childbirth	CVD	breech	vacuum	forceps	caesarean
1.8	Gestational age	term	post-term	ext. preterm	very preterm	mod. preterm
1.9	HIV status	negative	positive	unknown		
1.10	Syphilis serology	negative	positive	unknown		
1.11	Maternal age	20–34 y	> 34 y	18–19 y	< 18 y	unknown

SECTION 2: CAUSES OF MATERNAL DEATH

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
direct	direct	direct	direct	direct	direct	indirect	unspecified	coincidental

see ICD-MM reference sheet for more information on group classification

[2] Total maternal deaths should only be the sum of groups 1 to 8 and NOT include deaths in group 9. Deaths in group 9 are pregnancy-related deaths but not maternal deaths.

SECTION 3: CAUSE OF PERINATAL DEATH

3.1a	Cause of death: antepartum stillbirths	M1	M2	M3	M4	M5	other	unknown
	a. congenital							
	b. antepartum complications							
	c. intrapartum complications							
	d. complications of prematurity							
	e. infection							
	f. other							
	g. unknown/unspecified							
3.1b	Cause of death: intrapartum stillbirths	M1	M2	M3	M4	M5	other	unknown
	a. congenital							
	b. antepartum complications							
	c. intrapartum complications							
	d. complications of prematurity							
	e. infection							
	f. other							
	g. unknown/unspecified							
3.1c	Cause of death: neonatal deaths	M1	M2	M3	M4	M5	other	unknown
	a. congenital							
	b. antepartum complications							
	c. intrapartum complications							
	d. complications of prematurity							
	e. infection							
	f. other							
	g. unknown/unspecified							

see ICD-MM and ICD-PM reference sheets for more information on group classification

CVD: cephalic vaginal childbirth

Annex 9: Instructions for MPDSR – Facility monthly summary form

Purpose of form: To assist a facility in its documentation of births and perinatal deaths.

Responsibility for completion: Once per month by the facility data clerk or statistics department. Additionally, numbers generated on this form can be compared between months for qualitative trends. At every MPDSR meeting, these data can be reviewed to identify similarities in cases reviewed with overall trends. This may help to guide prioritization of actions or interventions recommended by the MPDSR Committee.

Section 1: Identification

1.1: Write facility name here.

1.2: Write the month and year for which these numbers were collected.

1.3: Write the name of the district of the facility.

1.4 Column 1: Total births: Write the total number of births in each of the categories, including both live and stillbirths, and including any live births of neonates who later died. The internationally comparable definition of stillbirth, as defined by WHO, is death before birth, among fetuses that are, by order of priority, of at least 1000 g birthweight, and/or at least 28 weeks' gestation, and at least 35 cm long.[3]

Column 2: Stillbirths: Write the total number of births in each category, as defined here:

- "Antepartum SB" (antepartum stillbirth) is the death of a fetus before the onset of labour.
  - This can be determined by "macerated" appearance of the fetus upon childbirth, in combination with absence of fetal heart sounds on admission.
    - Absence of fetal heart sounds on admission does not necessarily indicate an antepartum stillbirth, as there may have been delays in reaching the facility during labour.
    - Presence of fetal heart sounds on admission of a labouring woman does exclude the possibility of an antepartum stillbirth.
- "Intrapartum SB" (intrapartum stillbirth) is the death of a fetus who was alive at the onset of labour, but who died before childbirth.
  - This can be determined by the presence of fetal heart sounds (fetal heart tones) on admission or prior to childbirth, or, by the appearance of a "fresh" stillbirth (intact skin and fetus on childbirth).
- "Unknown timing for SB" (stillbirth of unknown timing) is the category for those for whom it is not possible to tell the timing of the stillbirth.

1.5: In the "pregnancies" box, write the total number of pregnancies of at least two fetuses (e.g. twins, triplets)

In the "babies" box, write the total number of fetuses or neonates who resulted from these pregnancies. Include those born alive, as well as those who were stillborn.

For example, suppose that in one month a hospital delivered 10 women who had pregnancies with more than one fetus. Suppose that of these 10 women, 8 delivered live twins, 1 delivered stillborn twins, and 1 delivered live triplets. In this example, the "pregnancies" box would have the number 10, and the "babies" box would have the number 21.

1.6: Enter the total number of deliveries that occurred before arrival to the facility.

[3] See Figure 2.1 in *Making every baby count: audit and review of stillbirths and neonatal deaths*

1.7: Write in each box the total number of deliveries by CVD (cephalic vaginal childbirth), assisted, caesarean, and unknown.

1.8: Write in each box the total number of:

- term deliveries: pregnancies of gestational age 37+0 weeks to 41+6 weeks;
- post-term deliveries: pregnancies of gestational age 42 weeks or greater (≥ 42+0);
- extremely preterm deliveries ("ext. preterm"): pregnancies of gestational age less than 28 weeks (≤ 27+6) (lower limit may depend on setting; consider 23+0 weeks for inclusion on this form);
- very preterm deliveries: gestational age between 28+0 and 31+6 weeks;
- moderate to late preterm deliveries ("mod. preterm"): pregnancies of gestational age 32+0–36+6 weeks.

1.9: Record numbers of HIV-negative mothers, HIV-positive mothers, and mothers of unknown HIV status served by the facility in the past month.

1.10: Record numbers of syphilis-negative mothers, syphilis-positive mothers, and mothers of unknown syphilis status served by the facility in the past month.

1.11: Record numbers of mothers served by the facility in the past month within each of the age categories, as well as those for whom age was unknown.

Section 2: Cause of maternal death

2: Record the numbers of maternal death by ICD-MM group. Use the ICD-MM reference sheet if needed.

Section 3: Cause of perinatal death

3.1a: Tally the number of causes of antepartum stillbirths in each of the listed categories in the past month at this facility. If M1–M5 designations were used, total those. If M1–M5 designations were not used, enter all in the "other" column provided. Tally any unknowns in the "unknown" column.

If a facility has stillbirths for which antepartum vs. intrapartum status is unknown, record these separately to the right of the antepartum deaths list, along the same rows.

3.1b: Tally the number of causes of intrapartum stillbirths in each of the listed categories in the past month at this facility. If M1–M5 designations were used, total those. If M1–M5 designations were not used, enter all in the "other" column provided. Tally any unknowns in the "unknown" column.

3.1c: Tally the number of causes of neonatal deaths in each of the listed categories in the past month at this facility. If M1–M5 designations were used, total those. If M1–M5 designations were not used, enter all in the "other" column provided. Tally any unknowns in the "unknown" column.

Annex 10: Maternal death case review form

SECTION 1: IDENTIFICATION						
1.1	ID # / Full name of mother: _____					
1.2	Facility name: _____					
1.3	Type of care available:	Comprehensive EmOC	Basic EmOC	first aid	home delivery	
1.4	District name: _____					
1.5	Referred	not referred	referred in from: _____			
			referred out to: _____			

SECTION 2: PREGNANCY AND ANTENATAL CARE						
2.1	Obstetric history	Gavidity	Parity	Live births	Stillbirths	Spontaneous abortions	Induced abortions
2.1a	Previous cesareans (and date of most recent)	none	number: _____	date of most recent c/s: _____			
2.1b	Previous pregnancy complications	none	number and date: _____	description: _____			
2.2	Mother's age: _____ y						
2.3	Mother's education	None	Primary	Secondary	Higher		
2.4	Marital status	Single	Married	Widowed	Divorced	Separated	Living in union
2.5	Contraception use just prior to pregnancy	no	yes	If yes, what type (e.g. Pill, DMPA, Implant, IUD): _____			
2.6	Type of pregnancy	singleton	twin	higher multiple =	unknown		
2.7	Antenatal care number of visits	8+	6–7	4–5	3	2	1	no visits	unknown

2.8	Pre-existing medical conditions				
2.8a	Hypertension	no	yes	unknown	
2.8b	Diabetes	no	yes	unknown	
2.8c	Anaemia	no	yes	unknown	
2.8d	Hepatitis	no	yes	unknown	
2.8e	Heart Problem	no	yes	unknown	
2.8f	Syphillis	no	yes	unknown	
2.8g	Other _____	no	yes	unknown	
2.9	Antenatal risk factors				
2.9a	Hypertension	no	yes	unknown	
2.9b	Proteinuria	no	yes	unknown	
2.9c	Glycosuria	no	yes	unknown	
2.9d	Anaemia	no	yes	unknown	
2.9e	Urinary tract infection	no	yes	unknown	
2.9f	Placenta previa	no	yes	unknown	
2.9g	Malaria	no	yes	not applicable	unknown
2.9h	Other _____	no	yes	unknown	
2.10	Antenatal hospitalization?	no	yes	unknown	
	Describe: _____				
2.11	Antenatal medications?	no	yes	unknown	
	List: _____				
2.12	Laboratory tests				
2.12a	Blood type and Rh	no	yes	unknown	
2.12b	Hemocrit/hemoglobin	no	yes	unknown	
2.12c	VDRL	no	yes	unknown	
2.12d	Rubella	no	yes	unknown	
2.12e	Urinalysis	no	yes	unknown	
2.12f	Other _____	no	yes	unknown	

adjust as per local context

2.13	Malaria prophylaxis	not needed	IPT3+	IPT2	IPT1	not received	unknown
2.14	Tetanus toxoid vaccination		TT2+	TT2	TT1	not received	unknown
2.15	HIV status		HIV-negative	HIV-positive		not done	unknown
2.15.1	HIV-positive action			HAART		other, specify: _____	
2.16	Tuberculosis status		Tb positive action	under treatment, specify		no treatment	

SECTION 3: PATHWAY BEFORE ADMISSION

3.1	Patient came on her own	no	yes			
	Referred or evacuated	no	yes			
3.2	If referred/ evacuated: Referral center: _____					
3.3	Reason for referral/evacuation: _____					
3.4	Ambulance	no	yes	If yes, medical (medicines and health personnel on board)?	no	yes
3.5	Accompanying person?	no	yes	If yes, specify: _____		
3.6	Date and time of onset of symptoms: _____					
3.7	Date and time of the referral/evacuation decision: _____					
3.8	Date and time of departure from the referral center: _____					

SECTION 4: ADMISSION

4.1	Vital signs				
4.1a	Heart rate	no	yes	unknown	Specify: _____
4.1b	Systolic blood pressure	no	yes	unknown	Specify: _____
4.1c	Diastolic blood pressure	no	yes	unknown	Specify: _____
4.1d	Temp (Celsius)	no	yes	unknown	Specify: _____
4.1e	Respiratory rate	no	yes	unknown	Specify: _____
4.1f	Height	no	yes	unknown	Specify: _____
4.1g	Weight	no	yes	unknown	Specify: _____
4.1h	Other _____	no	yes	unknown	
4.2	Abdominal Examination				
4.2a	Fundal height	no	yes	unknown	
4.2b	Fetal heart sounds on admission	no	yes	unknown	
4.2c	Fetal presentation	normal		abnormal	
4.3d	Other _____	no	yes	unknown	
4.3	Pelvic Examination				
4.3a	Stage of labor	not in labour		in active labor	second / third
4.3b	Pelvic abnormality	no	yes	unknown	
4.4	Admission complications				
4.4a	Premature rupture of membranes	no	yes	unknown	
4.4b	Pre-eclampsia	no	yes	unknown	
4.4c	Eclampsia	no	yes	unknown	
4.4d	Abruption	no	yes	unknown	
4.4e	Placenta Praevia	no	yes	unknown	
4.4f	Premature labour	no	yes	unknown	
4.4g	Fetal Demise	no	yes	unknown	
4.4h	Pylonephritis	no	yes	unknown	
4.4i	Sepsis	no	yes	unknown	
4.4j	Malaria	no	yes	not applicable	unknown
4.4k	Other _____	no	yes	unknown	

SECTION 5: LABOUR AND BIRTH

5.1	Mother's LMP	DD	MM	YYYY	unknown
5.2	Date of birth	DD	MM	YYYY	
5.2.1.	Time of birth	_____ : _____ h			

5.3	Gestational age	weeks			unknown						
	5.3.1. Method of determination	sure LMP dates			unsure LMP dates						
		early ultrasound			late ultrasound						
5.4	Place of childbirth			facility	home	road	other, specify				unknown
	5.4.1 Attendant at childbirth	midwife	nurse	doctor	other, specify: _____			no one			unknown
5.5	Onset of labour			spontaneous	induced	c/s before onset					unknown
5.6	Fetal heart sound			no	yes						unknown
5.7	Partograph used			no	yes						unknown
5.8	Complications of labour and birth										
	5.8a Intrapartum hemorrhage			no	yes	unknown					
	5.8b Intrapartum infection			no	yes	unknown					
	5.8c Intrapartum pre-eclampsia/eclampsia			no	yes	unknown					
	5.8d Obstructed labor			no	yes	unknown					
5.9	Mode of childbirth			CVD	vaginal breech	internal podalic version	breech extraction				
5.10	Time between action decision and birth	n/a		< 30 mins	30–60 min	> 60 mins	unknown				
5.11	Active management of third stage?			no	yes	unknown					
5.12	Retained placenta?			no	yes	unknown					
5.13	Postpartum hemorrhage			no	yes	unknown					
5.14	Postpartum infection			no	yes	unknown					
5.15	Postpartum pre-eclampsia/eclampsia			no	yes	unknown					

SECTION 6: NEONATE

6.1	Apgar score	1 min = _____		6 or more	5 or less		
		5 min = _____		6 or more	5 or less		
6.2	Resuscitation	not needed		bag + mask	not done	Other, specify: _____	
6.3	Sex of baby	male		female			
6.4	Birth weight	_____ g		≥ 2500 g	1500–2499 g	1000–1499 g	< 1000 g
					LBW	VLBW	ELBW

SECTION 7: INTERVENTIONS

7.1	Early pregnancy			
	Evacuation	no	yes	unknown
	Laparotomy	no	yes	unknown
	Hysterotomy	no	yes	unknown
	Transfusion	no	yes	unknown
	Other _____	no	yes	unknown
7.2	Antepartum			
	Transfusion	no	yes	unknown
	Version	no	yes	unknown
	Labour induction	no	yes	unknown
	Magnesium Sulfate	no	yes	unknown
	Antibiotics	no	yes	unknown
	Other _____	no	yes	unknown
7.3	Intrapartum			
	Symphysiotomy	no	yes	unknown
	Hysterectomy	no	yes	unknown
	Transfusion	no	yes	unknown
	Magnesium Sulfate	no	yes	unknown
	Antibiotics	no	yes	unknown
	Destructive operations (e.g. craniotomy)	no	yes	unknown
	Other _____	no	yes	unknown

7.4 Postpartum			
Evacuation	no	yes	unknown
Laparotomy	no	yes	unknown
Hysterotomy	no	yes	unknown
Hysterectomy	no	yes	unknown
Transfusion	no	yes	unknown
Magnesium Sulfate	no	yes	unknown
Antibiotics	no	yes	unknown
Oxytocin	no	yes	unknown
Misoprostol	no	yes	unknown
Other _____	no	yes	unknown

7.5 Other interventions			
General Anaesthesia	no	yes	unknown
Epidural	no	yes	unknown
Spinal	no	yes	unknown
Local	no	yes	unknown
ICU ventilation	no	yes	unknown
Invasive monitoring	no	yes	unknown
Other _____	no	yes	unknown

SECTION 8: DETAILS OF THE DEATH

8.1 Date of death	DD	MM	YYYY
7.1.1 Time of death	_____ : _____ h		

8.2 Underlying cause of death (ICD MM): _____	Group 1	Group 2	Group 3	Group 4	Group 5
	Group 6	Group 7	Group 8	Group 9	

8.3 Contributory causes of death:	ICDMM code	not identified
8.4 Autopsy	Not done	Completed

SECTION 9: CRITICAL DELAYS AND MODIFIABLE FACTORS

9.1 Critical delays	delay 1 not identified	1. delay recognizing need for care: _____
	delay 2 not identified	2. delay seeking care: _____
	delay 3 not identified	3. delay receiving care: _____

9.2 Modifiable factors		
Family-related	none identified	Specify: _____

e.g. late/no antenatal care; cultural inhibition to seeking care; no knowledge of danger signs; financial constraints; partner restricts care-seeking; use of traditional/ herbal medicine; smoking / drug / alcohol abuse; attempted termination; etc.

Administration-related	none identified	Specify: _____

e.g. neonatal facilities; theatre facilities; resuscitation equipment; blood products; lack of training; insufficient staff numbers; anaesthetic delay; no antenatal documentation; etc.

Provider-related	none identified	Specify: _____

e.g. partogram not used; action not taken; inappropriate action taken; iatrogenic childbirth; delay in referral; inadequate monitoring; delay in calling for assistance; inappropriate discharge; etc

Other _____	none identified	Specify: _____

Actions to address the critical delays and modifiable factors

Form completed by: _____ Date: _____

c/s: caesarean section; CVD: cephalic vaginal childbirth; ELBW: extremely low birthweight; EmOC: emergency obstetric care; HAART: highly active antiretroviral therapy; HIV: human immunodeficiency virus; IPT: intermittent preventive treatment; LBW: low birthweight; LMP: last menstrual period; NVP: nevirapine prophylaxis; TT: tetanus toxoid; VLWB: very low birthweight

Section 7: See ICD-MM reference sheet for more information on group classification

Annex 11: Instructions for completing the Maternal death case review form

Purpose of form: To assist maternal death review meetings/ committees in reviewing a maternal death, to provide information about the death, and to identify critical delays and modifiable factors that can be targeted with interventions to prevent future deaths. The form is designed so that the 'normal' answers appear on the left and the 'abnormal' answers appear on the right, making it easier to visually identify problem areas. The accompanying reference form for maternal conditions according to ICD-MM should be used alongside this form. The WHO application of ICD-10 should be used for more details (ICD-MM).

Section 1: Identification

1.1: ID# / Full name of mother: Include all ID numbers that are standardly used by your health care facility. If no standard ID numbers are used, write the mother's name here.

1.2: Put the name of the facility where the maternal death took place. If it is being reviewed at a different facility, add "reviewed at facility: _____" to clarify.

1.3: Type of care available: Circle the type of care available at the time the mother presented for care.

Type of care is defined according to the World Health Organization classification of basic emergency obstetric and newborn care (BEmONC) and comprehensive emergency obstetric and newborn care (CEmONC), from Monitoring emergency obstetric care: a handbook, 2009.

To classify care as "basic", it must provide all of seven essential interventions:

1) administer parenteral antibiotics

2) administer uterotonic drugs (i.e. parenteral oxytocin)

3) administer parenteral anticonvulsants for pre-eclampsia and eclampsia (i.e. magnesium sulfate)

4) manually remove the placenta

5) remove retained products of conception (e.g. manual vacuum extraction, dilation and curettage)

6) perform assisted vaginal childbirth (e.g. vacuum extraction, forceps childbirth)

7) perform basic neonatal resuscitation (e.g. with bag and mask).

To classify care as "comprehensive", it must provide the seven essential interventions listed above and the following additional interventions:

1) perform surgery (i.e. caesarean section)

2) perform blood transfusion.

1.4: District name: Put the name of the district where the facility at which the mother delivered is located. This may not be the district that the mother is from.

1.5: Circle "not referred" if the woman presented from home.

If the woman was referred from another hospital, health centre or clinic, write the name of that facility on the line for "referred in from".

If the woman was referred out to another hospital or other facility, put the name of that hospital or other facility on the line for "referred out to".

Section 2: Pregnancy progress and care

2.1: Obstetric history: For "gravidity", put the total number of pregnancies the mother had. Include the pregnancy being discussed. Pregnancies with twins or other multiples are counted as one pregnancy.

For "parity", put the total number of births the woman has had of babies of gestational age of 28 weeks. Some countries consider babies of gestational age of 22 weeks, so please adopt based on your country's national definition. Include the pregnancy being discussed. Deliveries of twins or other multiples are counted as one childbirth.

For "live births", put the number of living children of the mother. If both are living, twins are counted as two living children.

For "stillbirths", put the number of deceased babies before birth, among fetuses that are, by order of priority, of at least 1000 g birthweight, and/or at least 28 weeks gestation, and at least 35 cm long, depending on the country's national definition.

2.1a: Previous caesareans: Write the number of caesarean sections done, along with the dates if any.

2.1b: Previous pregnancy complications: write the number of pregnancy complications, the date when they happened, and under "description", write what happened.

2.2: Put the mother's age in completed years. For example, a woman of 23 years and 10 months of age would be entered as "23".

2.3: Mother's education: Specify the level of education of the mother, whether she has a primary or secondary level of school or higher, or whether she received no education.

2.4: Marital status: Specify her marital status (single and never married, married, widowed, divorced, separated but married, or living in union but not married and not single).

2.5: Contraception use just prior to pregnancy: Specify if the woman was using any family planning method and, if so, which modern contraception method the woman was using.

2.6: Circle the type of pregnancy being discussed:

- "singleton" if a pregnancy with one fetus;
- "twin" if a pregnancy with two fetuses;
- "higher multiple" if greater than two fetuses. If greater than two fetuses, put the number of fetuses next to the equals sign;
- "unknown" if the total number of fetuses is/was not known.

2.7: Circle the total number of antenatal care visits the mother had during this pregnancy.

2.8: Circle the pre-existing medical conditions that the woman had during this pregnancy.

- Circle "unknown" if there is no information on her receipt of treatments.

2.9: Circle the antenatal risk factors that the woman had during this pregnancy.

- Circle "unknown" if tests not done/or there is no information on her receipt of treatments.

2.10: Circle if the woman has had any antenatal hospitalization during this pregnancy. If "yes", then provide details of why, when and where (which facility), and what treatment/advice was provided.

- Circle "unknown" if there is no information on her receipt of treatments.

2.11: What antenatal medications is the woman taking during this pregnancy?

- Circle “unknown” if there is no information on her receipt of treatments.

2.12: Circle the status of the laboratory tests in the list carried out during this pregnancy.

- Circle “unknown” if there is no information on her receipt of treatments.

2.13: Circle the number of intermittent prophylactic treatments (IPT) for malaria that the woman received during her pregnancy.

- Circle “not needed” if malaria prophylaxis was not medically indicated due to lack of malaria in her residence during pregnancy.
- Circle “IPT3+” if she received at least three treatments.
- Circle “IPT2” if she received only two treatments.
- Circle “IPT1” if she received only one treatment.
- Circle “not received” if she did not receive any IPT in an area where it is indicated.
- Circle “unknown” if there is no information on her receipt of treatments.

2.14: Circle the number of tetanus toxoid (TT) doses that the woman received during her pregnancy, or whether she was protected at birth (“PAB”) through vaccinations during childhood or during previous pregnancies.

2.15: Indicate the mother’s HIV status.

- Circle “HIV negative” if the woman was tested and found to be negative.
- Circle “HIV positive” if the woman was tested and found to be positive, or was known to be positive prior to pregnancy (and proceed to 2.71 below).
- Circle “not done” if no HIV testing was performed during pregnancy.
- Circle “unknown” if the HIV status and testing status are unknown.

2.15.1: If the woman was found to be HIV positive or known to be HIV positive prior to pregnancy, indicate what action was taken:

- Circle “HAART” if the woman received highly active antiretroviral treatment during her pregnancy.
- Next to “other”, write if:
  - any additional treatment was received for HIV or its complications
  - no treatment was received
  - treatment was received but the type is unknown.

Do not complete line 2.15.1 for any woman who was not known to be HIV positive.

2.16: Indicate the mother’s tuberculosis status.

- Circle “negative” if the woman was tested for TB and found to be negative.
- Circle “positive” if the mother was tested and found to be positive; specify the medication she is taking.
- Circle “not done” if no testing was performed during pregnancy.
- Circle “unknown” if the status and testing status are unknown.

Section 3: Pathway before admission

3.1: Enter all referral details and means of transportation.

Section 4: Details on admission

4.1: Enter the details of the "vital signs" on admission.

- Circle "no" if they were not measured.
- Circle "yes" if they were measured, and enter the details.
- Circle "unknown" if nothing is mentioned.

4.2: Enter the details of abdominal examination of the pregnant woman.

- Circle "yes" and provide the details of fundal height and fetal heart sounds if they were measured.
- If the fetal presentation is "abnormal", please provide details.

4.3: Enter the details of pelvic examination of the pregnant woman.

- Circle the stage of labour she is in.

4.4: Enter the details if the woman had any complications on admission during this pregnancy.

Section 5: Labour and birth

5.1: Woman's LMP: If there is an LMP in line with first trimester ultrasound, enter this here.

1) If there is no LMP in line with first trimester ultrasound, enter the estimated LMP according to mother's recollection.

2) Do not enter LMP based on third trimester ultrasound, or estimated by size at childbirth.

3) If there is no LMP by ultrasound or mother's recollection, circle "unknown".

5.2: Date of birth: Record the date or birth here, whether live or stillborn.

5.3: Gestational age. Enter in weeks and days at the time of birth (live or stillbirth), using the LMP. If there is no gestational age calculated, circle "unknown".

5.3.1: Method of determination: Circle the method by which this gestational age was calculated. This should be the same method as was used to derive LMP. Additionally, circle "sure" or "unsure" LMP dates based on mother's certainty.

- If mother's certainty is not stated, circle "sure".

5.4: Circle the place of childbirth. If childbirth was at a facility, enter the facility's name on this line.

5.4.1: Attendant at childbirth:

- Circle "midwife" if childbirth was attended by a trained midwife.
- Circle "doctor" if childbirth was attended by a physician.
- Circle "nurse" if childbirth was attended by a trained skilled birth attendant.
- Write in "other" if childbirth was attended by someone else.
- Circle "unknown" if childbirth attendant is not known.

5.5: Onset of labour: Circle if onset was spontaneous, induced or if baby was delivered by caesarean section before onset of labour.

5.6: If fetal heart sounds (fetal heart tones) were auscultated on admission and were not present, circle "no". If fetal heart sounds (fetal heart tones) were auscultated on admission and were present, circle "yes" and write what they were recorded as on admission. If fetal heart sounds were not auscultated on admission, or if this information is not available, circle "unknown".

5.7: Use of partograph: Circle whether or not a partograph was used during childbirth, or enter "unknown" if this information is not available. If a partograph was used during childbirth, write any relevant additional comments next to "yes". For example, write "incomplete" if it was used for only a portion of childbirth or does not include all standard information on a partograph.

5.8: Complications of labour and birth: Circle one of the options.

5.9: Mode of childbirth:

- Circle "CVD" (cephalic vaginal childbirth) if it was a normal vaginal childbirth with cephalic presentation.
- Circle "vaginal breech" if it was a spontaneous vaginal childbirth with breech presentation.
- Circle "breech extraction" if it was an assisted vaginal breech childbirth.
- Enter under "others" it was a vacuum or a forceps childbirth or other complications, e.g. shoulder dystocia.
- "caesarean" if indicated, or
- Enter "unknown" if this information is not available.

5.10: Time between action decision and birth: If mode of childbirth was anything other than "CVD", circle the time from decision to proceed with this form of childbirth and the childbirth itself. If childbirth was "CVD", circle "not applicable".

5.11 to 5.15: Circle any one of the options for the conditions or interventions.

Section 6: Neonate

6.1: Record the APGAR scores at 1 and at 5 minutes. Next to these, circle "6 or more" or "5 or less", as indicated by the score. If either of these scores is not available, circle "unknown" for that score.

6.2: Resuscitation of the neonate:

- Circle "not needed" if not indicated by APGAR scores or clinical state.
- Circle "bag + mask" if performed.
- Circle "none" if resuscitation was indicated but not performed.
- Circle "other" and record if the following forms of resuscitation were performed:
  - Stimulation
  - Suction
  - Intubation
  - CPR
  - Other forms of resuscitation (record).

6.3: Sex of baby: circle "male", "female" or "unknown" as indicated.

6.4: Birthweight: record the total birthweight and circle the appropriate category. The acronyms stand for:

- Low birthweight (LBW), <2500 g

- Very low birthweight (VLBW), <1500 g
- Extremely low birthweight (ELBW), <1000 g.

Section 7: Interventions:

7.1: Early pregnancy: Provide details if interventions such as evacuation, laparotomy, hysterectomy or transfusion were carried out. If there is no mention of any, circle "unknown". If there was any other intervention, specify.

7.2: Antepartum: Provide details if interventions such as version or induction of labour were done, and/or if transfusion, magnesium sulphate and antibiotics were given during the antepartum period. In the event of any other, provide details.

7.3: Intrapartum: Provide details if interventions such as symphysiotomy or hysterectomy were done, or if destructive operation was done on the fetus; and/or if transfusion, antibiotics and magnesium sulphate were given during the intrapartum period. In the event of any other, provide details.

7.4: Postpartum: Provide details if interventions such as evacuation, laparotomy, hysterotomy, hysterectomy were carried out; and/or if transfusion, antibiotics and magnesium sulphate, oxytocin and misoprostol were given during the postpartum period. In the event of any other, provide details.

7.5: Other interventions: Provide details if interventions such anaesthesia (general, spinal, epidural or local) was used, if there was any invasive monitoring or intensive care was provided. In the event of any other, provide details.

Section 8: Details of the death

8.1 and 8.1.1: Record the date and time of death.

8.2: Circle the type of death. Note that Groups 1–6 are grouped as direct causes of maternal death, Group 7 as indirect causes of maternal death, Group 8 where cause of maternal death is unspecified (not known or determined), and Group 9 as pregnancy-related death during pregnancy, childbirth and puerperium due to coincidental causes.

Enter the name of the main maternal condition found on the maternal conditions reference page according to ICD-MM guidance. Please see the WHO application of ICD-10 to deaths during the maternal period: (ICD-MM) for more detail.

8.3: Contributory causes of death: Identify the relevant cause of maternal death using the numbers provided on the accompanying reference page, and according to ICD-MM guidance.

8.4: Mention if an autopsy was completed or not done.

Section 9: Critical delays and modifiable factors

9.1: Circle any delays in care that are recognized in review of the case.

Delay 1: Delay in the **decision** to seek care (for example, a woman may labour at home for too long because she and/or her family are afraid to come for care, are concerned about the cost of care, or do not recognize developing problems).

If a Delay 1 is present, circle "Delay 1" and describe the delay on this line. If no Delay 1 is identified, circle "not identified".

Delay 2: Delay in **reaching** care (for example, a labouring woman may not be able to find or afford suitable transport to a care facility).

If a Delay 2 is present, circle "Delay 2" and describe the delay on this line. If no Delay 2 is identified, circle "not identified".

Delay 3: Delay in **receiving** adequate care (for example, a labouring woman may arrive at a hospital without any clinicians available to provide care to her, or transfer between lower and higher-level facilities may take too long to provide effective care and prevent death).

If a Delay 3 is present, circle "Delay 3" and describe the delay on this line. If no Delay 3 is identified, circle "not identified".

9.2: Modifiable factors: This section relates to modifiable factors in terms of levels of system failure. These may be helpful to identify interventions aimed at preventing future deaths.

Family-level related: Did the family of the pregnant woman who died not understand when to seek care? Should families in their community be recipients of any educational campaign, or resources to get them to care sooner?

If a family-level modifiable factor is present, circle "family related" and describe the factor(s) next to "specify". If no family-level modifiable factor can be identified, circle "none identified".

Administration-level related: Was transfer between lower and higher-level facilities inhibited by administrative barriers? Was there a stock-out of any needed drugs or equipment?

If an administration-level modifiable factor is present, circle "administration related" and describe the factor(s) next to "specify". If no administration-level modifiable factor can be identified, circle "none identified".

Provider-level related: Was a provider unable to give timely and adequate care? Is there a need for training or additional resources for provider use?

If a provider-level modifiable factor is present, circle "provider related" and describe the factor(s) next to "specify". If no provider-level modifiable factor can be identified, circle "none identified".

Comments on critical delays and avoidable factors:

This section is the least structured part of the form, but potentially the most important.

Participants in the maternal death review should work together to highlight the critical delays and avoidable factors that can be targeted by interventions. It is particularly helpful to ask the question: "What if we could not say that any individual (either the family member or any provider) was at fault? What could actually be done to prevent a critical delay or avoidable factor?"

Provide any comments that the group can generate to address these critical delays and avoidable factors, attaching additional pages as needed.

Adding a contact name for "form completed by" with contact information can be very helpful to future people reviewing the forms.

Add the date on which the review was completed next to "Date".

Annex 12: Stillbirth and neonatal death case review form

SECTION 1: IDENTIFICATION

1.1 ID # / Full name mother: _____

1.2 ID # / Full name baby: _____

1.3 Facility name: _____

1.4 Type of care available:	comprehensive EmOC	basic EmOC	first aid	home delivery

1.5 District name: _____

1.6 Referred	not referred	referred in from: _____
		referred out to: _____

SECTION 2: PREGNANCY PROGRESS AND CARE

2.1 Obstetric history	Gravidity	Parity	Live births	Deaths	Stillbirths	Neonatal deaths	Abortions

2.1a Previous cesareans (and date of most recent)	none	number: _____	date of most recent c/s: _____
2.1b Previous pregnancy complications	none	number and date: _____	description : _____

2.2 Mother's age _____ y

2.3 Mother's education	None	Primary	Secondary	University
2.4 Marital status	Single	Married	Widowed	Divorced	Separated
2.5 Contraception use just prior to pregnancy	Yes	No	If yes, what type (e.g. Pill, DMPA, Implant, IUD): _____
2.6 Type of pregnancy	singleton	twin	higher multiple = _____	unknown
2.7 Antenatal care number of visits	8+	6–7	4–5	3	2	1	no visits	unknown

Adjust as per local context

2.8 Malaria prophylaxis	not needed	IPT3+	IPT2	IPT1	not received	unknown
2.9 Tetanus toxoid vaccination	TT2+ or PAB	TT2	TT1	not received	unknown
2.10 HIV status	HIV-negative	HIV-positive	not done	unknown
2.10.1 HIV-positive action	HAART	other, specify
2.11 Syphilis test	negative	syphilis-positive	not done	unknown

SECTION 3: LABOUR AND BIRTH

3.1 Mother's LMP	DD	MM	YYYY	unknown
3.2 Date of birth	DD	MM	YYYY	

3.2.1. Time of birth: ____ : ___ h

3.3 Gestational age	weeks	unknown
3.3.1 Method of determination	sure LMP dates	unsure LMP dates
	first trimester ultrasound	other ultrasound

3.4 Place of childbirth	facility	home	road	other, specify	unknown
3.4.1 Attendant at childbirth	midwife	nurse	doctor	other, specify	no one	unknown
3.5 Onset of labour	spontaneous	induced	c/s before onset	unknown

3.6 Fetal heart sounds on admission		no	yes			unknown
3.7 Partograph used		no	yes			
3.8 Mode of childbirth		CVD	breech	caesarean	other, specify	unknown
3.9 Time between action decision and birth		n/a	< 30 mins	30–60 min	> 60 mins	unknown
3.10 Apgar score	5 min =	6 or more	5 or less			unknown
	10 min =	6 or more	5 or less			unknown

3.11 Resuscitation	not needed	bag + mask	not done	other, specify: _____		unknown
3.12 Sex of baby	male	female				unknown
3.13 Birth weight	g	≥ 2500 g	1500–2499 g	1000–1499 g	< 1000 g	unknown
			LBW	VLBW	ELBW	

SECTION 4: DETAILS OF THE DEATH

4.1 Date of death DD MM YYYY

4.1.1 Time of death: ____ : ___ h

4.2 Type of death (circle one)	neonatal death	intrapartum stillbirth	antepartum stillbirth	stillbirth, unknown timing	

4.3 Main maternal condition	none identified	Main maternal condition followed by the corresponding number. Use the reference page to write in corresponding number below. Include more than one if applicable.							
4.4 Cause of death (circle one)		M1	M2	M3	M4	M5	other	unknown	
a. congenital									
b. antepartum complications									
c. intrapartum complications									
d. complications of prematurity									
e. infection	Tetanus, Sepsis, Pneumonia, Meningitis, Syphilis, Diarrhoea, Other, specify if known: _____								
f. other, specify: _____									
g. unknown/unspecified									

SECTION 5: CRITICAL DELAYS AND MODIFIABLE FACTORS

5.1 Critical delays	delay 1 not identified	1. delay recognizing need for care: _____
	delay 2 not identified	2. delay seeking care: _____
	delay 3 not identified	3. delay receiving care: _____

5.2 Modifiable factors

Family-related	none identified	specify: _____

e.g. late/no antenatal care; cultural inhibition to seeking care; no knowledge of danger signs; financial constraints; partner restricts care-seeking; use of traditional/ herbal medicine; smoking / drug / alcohol abuse; attempted termination; etc.

Administration-related	none identified	specify: _____

e.g. neonatal facilities; theatre facilities; resuscitation equipment; blood products; lack of training; insufficient staff numbers; anaesthetic delay; no antenatal documentation; etc.

Provider-related	none identified	specify: _____

e.g. partogram not used; action not taken; inappropriate action taken; iatrogenic childbirth; delay in referral; inadequate monitoring; delay in calling for assistance; inappropriate discharge; etc

other	none identified	specify: _____

Actions to address the critical delays and modifiable factors

_____

_____

_____

_____

_____

_____

Form completed by: _____ Date: _____

c/s: caesarean section; CVD: cephalic vaginal childbirth; ELBW: extremely low birthweight; EmOC: emergency obstetric care; HAART: highly active antiretroviral therapy; HIV: human immunodeficiency virus; IPT: intermittent preventive treatment; LBW: low birthweight; LMP: last menstrual period; NVP: nevirapine prophylaxis; TT: tetanus toxoid; VLWB: very low birthweight

Annex 13: Instructions for completing the stillbirth and neonatal death case review form

Purpose of form: To assist perinatal death review meetings/committees in reviewing a perinatal death, to provide information about the death, and to identify critical delays and modifiable factors that can be targeted with interventions to prevent future deaths. The form is designed so that the "normal" answers appear on the left and the "abnormal" answers appear on the right, making it easier to visually identify problem areas. The accompanying reference forms for maternal conditions according to ICD-PM should be used alongside this form. Please see the WHO application of ICD-10 to deaths during the perinatal period: (ICD-PM) for more detail.

Time of completion: during the perinatal death review meeting. Parts of the form may be copied from the set of minimum perinatal indicators in advance of the meeting, if this has been completed as a stand-alone form.

Section 1: Identification

1.1: ID# / Full name of mother: Include all ID numbers that are standardly used by your health-care facility.

If no standard ID numbers are used, write the mother's name here.

1.2: ID# / Full name of baby: Include all ID numbers that are standardly used by your health-care facility. If no standard ID numbers are used, put the baby's name. If the baby has no name, put mother's name + "boy" or "girl". If there are multiple babies for the same mother, add "boy #1" or "girl #1" as needed.

1.3: Facility name: Put the name of the facility where the maternal death took place. If it is being reviewed at a different facility, add "reviewed at facility: ____" to clarify.

1.4: Type of care available: Circle the type of care available at the time the mother presented for care.

Type of care is defined according to the World Health Organization classification of basic emergency obstetric and newborn care (BEmONC) and comprehensive emergency obstetric and newborn care (CEmONC), from Monitoring emergency obstetric care: a handbook, 2009.

To classify care as "basic", it must provide all of seven essential interventions:

1) administer parenteral antibiotics
2) administer uterotonic drugs (i.e. parenteral oxytocin)
3) administer parenteral anticonvulsants for preeclampsia and eclampsia (i.e. magnesium sulfate)
4) manually remove the placenta
5) remove retained products of conception (e.g. manual vacuum extraction, dilation and curettage)
6) perform assisted vaginal childbirth (e.g. vacuum extraction, forceps childbirth)
7) perform basic neonatal resuscitation (e.g. with bag and mask).

To classify care as "comprehensive", it must provide the seven essential interventions listed above and the following additional interventions:

1) perform surgery (i.e. caesarean section)
2) perform blood transfusion.

1.5: District name: Put the name of the district where the facility at which the mother delivered is located. This may not be the district that the mother is from.

1.6: Referred: Circle "not referred" if the woman presented from home.

If the woman was referred from another hospital, health centre or clinic, write the name of that facility on the line for "referred in from".

If the woman was referred out to another hospital or other facility, but the name of that hospital or other facility on the line for "referred out to".

Section 2: Pregnancy progress and care

2.1: Obstetric history: For "gravidity", put the total number of pregnancies the mother had. Include the pregnancy being discussed. Pregnancies with twins or other multiples are counted as one pregnancy.

For "parity", put the total number of births that the woman has had of babies of gestational age of 28 weeks. Some countries consider babies of gestational age of 22 weeks, so please adopt based on your country's national definition. Include the pregnancy being discussed. Deliveries of twins or other multiples are counted as one childbirth.

For "live births", put the number of living children of the mother. If both are living, twins are counted as two living children.

For "dead", put the number of deceased children of the mother. Include the fetus or neonate being discussed. If both are dead, twins are counted as two deceased children.

For "stillbirths", put the number of deceased babies before birth, among fetuses that are, by order of priority, of at least 1000 g birthweight, and/or at least 28 weeks gestation, and at least 35 cm long, depending on the country's national definition.

For "neonatal deaths", put the number of deaths after birth and within the first 28 days of life.

For "abortions", put the total number of terminations of pregnancy for the mother, whether elective or spontaneous.

2.1a: Previous caesareans: Write the number of caesarean section done along with the dates if any.

2.1b: Previous pregnancy complications: write the number of pregnancy complications, the date when they happened, and under "description", write what happened.

2.2: Mother's age: Put the mother's age in completed years. For example, a woman of 23 years and 10 months of age would be entered as "23".

2.3 Mother's education: Specify the level of education of the mother, whether she has a primary or secondary level of school or higher, or whether she received no education.

2.4 Marital status: Specify her marital status (single and never married, married, widowed, divorced, separated but married, or living in union, but not married and not single)

2.5: Contraception use just prior to pregnancy: Specify if the woman was using any family planning method, and if so, which modern contraception method the woman was using.

2.6: Type of pregnancy. Circle the type of pregnancy being discussed:

- "singleton" if a pregnancy with one fetus;
- "twin" if a pregnancy with two fetuses;
- "higher multiple" if greater than two fetuses. If greater than two fetuses, put the number of fetuses next to the equals sign;
- "unknown" if the total number of fetuses is/was not known.

2.7: Antenatal care number of visits: Circle the total number of antenatal care visits the mother had during this pregnancy with the fetus or neonate being discussed.

2.8: Malaria prophylaxis: Circle the number of intermittent prophylactic treatments (IPT) for malaria that the woman received during her pregnancy with the fetus or neonate being discussed.

- Circle "not needed" if malaria prophylaxis was not medically indicated due to lack of malaria in her residence during pregnancy.
- Circle "IPT3+" if she received at least three treatments.
- Circle "IPT2" if she received only two treatments.
- Circle "IPT1" if she received only one treatment.
- Circle "not received" if she did not receive any IPT in an area where it is indicated.
- Circle "unknown" if there is no information on her receipt of treatments.

2.9: Tetanus toxoid vaccination: Circle the number of tetanus toxoid (TT) doses that the woman received during her pregnancy or whether she was protected at birth ("PAB") through vaccinations during childhood or during previous pregnancies.

2.10: HIV status: Indicate the mother's HIV status.

- Circle "HIV negative" if the woman was tested and found to be negative.
- Circle "HIV positive" if the woman was tested and found to be positive, or was known to be positive prior to pregnancy (and proceed to 2.71 below).
- Circle "not done" if no HIV testing was performed during pregnancy.
- Circle "unknown" if the HIV status and testing status are unknown.

2.10.1: If the woman was found to be HIV positive or known to be HIV positive prior to pregnancy, indicate what action was taken:

- Circle "HAART" if the woman received highly active antiretroviral treatment during her pregnancy.
- Next to "other", write if:
  - any additional treatment was received for HIV or its complications
  - no treatment was received
  - treatment was received but the type is unknown.

Do not complete line 2.10.1 for any woman who was not known to be HIV positive.

2.11: Syphilis test: Indicate the mother's syphilis status

- Circle "negative" if the woman was tested for syphilis and found to be negative.
- Circle "syphilis-positive" if the mother was tested and found to be positive.
- Circle "not done" if no syphilis testing was performed during pregnancy.
- Circle "unknown" if the syphilis status and testing status are unknown.

Section 3: Labour and birth

3.1: Mother's LMP: Enter the date of the mother's last menstrual period (LMP) here. Choose LMP to record in this order:

1) If there is an LMP in line with first trimester ultrasound, enter this LMP.
2) If there is no LMP in line with first trimester ultrasound, enter the estimated LMP according to the mother's recollection.
3) Do not enter LMP based on third trimester ultrasound or estimated by size at childbirth.

4) If there is no LMP by ultrasound or mother's recollection, circle "unknown".

3.2: Date of birth: record the date and time of birth here, whether live or stillborn

3.3: Gestational age: enter gestational age in weeks and days at the time of birth (live or stillbirth), using the LMP. If there is no gestational age calculated, circle "unknown".

3.3.1 Circle the method by which this gestational age was calculated. This should be the same method as was used to derive LMP. Additionally, circle "sure" or "unsure" LMP dates based on mother's certainty. If mother's certainty is not stated, circle "sure".

3.4: Place of childbirth: Circle the place of childbirth. If childbirth was at a facility, enter the facility's name on this line. 3.4.1 Attendant at childbirth:

- Circle "midwife" if childbirth was attended by a trained midwife.
- Circle "doctor" if childbirth was attended by a physician.
- Circle "nurse" if childbirth was attended by a trained skilled birth attendant.
- Write in "other" if childbirth was attended by someone else.
- Circle "unknown" if childbirth attendant is not known.

3.5: Onset of labour: Circle if onset was spontaneous, induced or if baby was delivered by caesarean section before onset of labour.

3.6: Fetal heart sounds on admission: If fetal heart sounds (fetal heart tones) were auscultated on admission and were not present, circle "no". If fetal heart sounds (fetal heart tones) were auscultated on admission and were present, circle "yes". If fetal heart sounds were not auscultated on admission, or if this information is not available, circle "unknown".

3.7: Partograph used: Circle whether or not a partograph was used during childbirth, or "unknown" if this information is not available. If a partograph was used during childbirth, write any relevant additional comments next to "yes". For example, write "incomplete" if it was used for only a portion of childbirth, or does not include all standard information on a partograph.

3.8: Mode of childbirth: Circle the mode of childbirth of the fetus or neonate being discussed. Circle "CVD" for cephalic vaginal childbirth, or "breech" if a breech vaginal childbirth, or "caesarean" if this was the case, or "other" if none of these (and describe other complications, e.g. shoulder dystocia on the line), or "unknown" if this information is not available.

3.9: Time between action decision and birth: If mode of childbirth was anything other than "CVD", circle the time from the decision to proceed with this form of childbirth and the childbirth itself. If childbirth was "CVD", circle "not applicable".

3.10: Apgar score: Record the Apgar scores at 1 and at 5 minutes. Next to these, circle "6 or more" or "5 or less" as indicated by the score. If either of these scores is not available, circle "unknown" for that score.

3.11: Resuscitation:

- Circle "not needed" if not indicated by Apgar scores or clinical state.
- Circle "bag + mask" if performed.
- Circle "none" if resuscitation was indicated but not performed.
- Circle "other" and record if the following forms of resuscitation were performed:
  - stimulation
  - suction
  - intubation

  - CPR
  - other forms of resuscitation (record).

3.12: Sex of baby: Circle "male", "female" or "unknown" as indicated.

3.13: Birthweight: Record the total birthweight, and circle the appropriate category of birthweight. The acronyms stand for:

- Low birthweight (LBW), < 2500 g
- Very low birthweight (VLBW), < 1500 g
- Extremely low birthweight (ELBW), < 1000 g.

Section 4: Details of death

4.1 and 4.1.1: Record the date and time of death.

4.2: Type of death: Circle the type of death:

- "Neonatal death" is the death of a baby born alive, but who died within the first 28 days of life.
- "Intrapartum stillbirth" is the death of a fetus who was alive at the onset of labour, but who died before childbirth.
  - This can be determined by the presence of fetal heart sounds (fetal heart tones) on admission or prior to childbirth, or, by the appearance of a "fresh" stillbirth (intact skin and fetus on childbirth).

Examination of fetal remains for signs of skin deterioration, skin or umbilical cord staining due to darkened amniotic fluid, or skull softening can assist in determining whether the fetus died more than 12 hours prior to childbirth (macerated stillbirth), or less than 12 hours (fresh).

- "Antepartum stillbirth" is the death of a fetus before the onset of labour.
  - This can be determined by the "macerated" appearance of the fetus upon childbirth, in combination with absence of fetal heart sounds on admission.
    - Absence of fetal heart sounds on admission does not necessarily indicate an antepartum stillbirth, if the mother was admitted with labour already in progress.
    - Presence of fetal heart sounds on admission of a labouring woman does exclude the possibility of an antepartum stillbirth.
- "Stillbirth, unknown timing" should be circled if it is not possible to tell the time of death of the fetus.

Note the potential for misclassification between antepartum and intrapartum stillbirths and the importance of stillbirth timing on the implications for quality of care.

4.3: Main maternal condition: Enter the name of the main maternal condition found on the maternal conditions reference page according to ICD-PM guidance. Please see the WHO application of ICD-10 to deaths during the perinatal period: (ICD-PM) for more detail.

4.4: Cause of death: Identify the relevant cause of stillbirth or neonatal death. For infections, circle the most appropriate response. After choosing a main cause of stillbirth or neonatal death, indicate the maternal condition in the relevant M1–M5 category, using the numbers provided on the accompanying reference page according to ICD-PM guidance. If the mother was healthy, enter 1 in the M5 column corresponding to the cause of stillbirth or neonatal death.

Section 5: Critical delays and modifiable factors

5.1: Critical delays: Circle any delays in care that are recognized in review of the case.

Delay 1: Delay in the **decision** to seek care. (For example, a woman may labour at home for too long because she and/or her family are afraid to come for care, are concerned about the cost of care, or do not recognize developing problems).

If a Delay 1 is present, circle "Delay 1" and describe the delay on this line. If no Delay 1 is identified, circle "not identified".

Delay 2: Delay in **reaching** care. (For example, a labouring woman may not be able to find or afford suitable transport to a care facility).

If a Delay 2 is present, circle "Delay 2" and describe the delay on this line. If no Delay 2 is identified, circle "not identified".

Delay 3: Delay in **receiving** adequate care. (For example, a labouring woman may arrive at a hospital without any clinicians available to provide any care to her, or transfer between lower and higher-level facilities may take too long to provide effective care and prevent death).

If a Delay 3 is present, circle "Delay 3" and describe the delay on this line. If no Delay 3 is identified, circle "not identified".

5.2: Modifiable factors: This section relates to modifiable factors in terms of levels of system failure. These may be helpful to identify interventions aimed at preventing future deaths.

Family-level related: Did the family of the pregnant woman who died not understand when to seek care? Should families in their community be recipients of any educational campaign, or resources to get them to care sooner?

If a family-level modifiable factor is present, circle "family related" and describe the factor(s) next to "specify". If no family-level modifiable factor can be identified, circle "none identified".

Administration-level related: Was transfer between lower and higher-level facilities inhibited by administrative barriers? Was there a stock-out of any needed drugs or equipment?

If an administration-level modifiable factor is present, circle "administration related" and describe the factor(s) next to "specify". If no administration-level modifiable factor can be identified, circle "none identified".

Provider-level related: Was a provider unable to give timely and adequate care? Is there a need for training or additional resources for provider use?

If a provider-level modifiable factor is present, circle "provider related" and describe the factor(s) next to "specify". If no provider-level modifiable factor can be identified, circle "none identified".

Comments on critical delays and avoidable factors:

This section is the least structured part of the form, but potentially the most important.

Participants in the perinatal death review should work together to highlight the critical delays and avoidable factors that can be targeted by interventions. It is particularly helpful to ask the question: "What if we could not say that any individual (either the mother or any provider) was at fault? What could actually be done to prevent a critical delay or avoidable factor?"

Provide any comments that the group can generate to address these critical delays and avoidable factors, attaching additional pages as needed.

Adding a contact name for "form completed by" with contact information can be very helpful to future people reviewing the forms.

Add the date on which the review was completed next to "Date".

Annex 14: Minimum perinatal data set

The minimum perinatal data set is a core set of data elements for mandatory collection on every birth and death. There should be an agreement to collect uniform data across all sites involved in data collection and to supply it as part of the national collection. However, this does not preclude providers from facilities from collecting additional data to meet their own specific needs. The following data elements have been proposed as the minimum, which all facilities should collect and report to national level:

- mother's obstetric history (gravida, parity)
- mother's medical history
- mother's age
- single or multiple pregnancy
- antenatal care history (number of visits)
- HIV status
- gestational age (and method of determination)
- place of childbirth
- date and time of birth
- attendant at childbirth
- mode of childbirth
- sex of baby
- birthweight
- date and time of death (if applicable)
- type of death (antepartum stillbirth, intrapartum stillbirth, neonatal death)
- cause of death using ICD-10/11 or ICD-PM.

Annex 15: MPDSR monitoring framework

Purpose of the Monitoring Framework

This Monitoring Framework provides basic guidance on how Maternal and Perinatal Deaths Surveillance and Response (MPDSR) is being implemented, based on MPDSR principles as outlined in the *Maternal death surveillance and response technical guidance* and *Making every baby count*.

The indicators within this monitoring framework are based on the following MPDSR principles:

- maternal and perinatal deaths as notifiable events
- timely review committee meetings
- data quality
- implementation of recommendations

The following indicators are needed to monitor an MPDSR programme:

- record each maternal and perinatal death as a notifiable event
- conduct timely MPDSR steering committee meetings to review the information on the deaths at all levels
- ensure data quality
- identify causes of deaths and modifiable factors
- make recommendations for interventions to reduce deaths
- implement recommendations
- monitor the progress and the effect/impact of recommendation implementation and adjust where necessary

The purpose of this Monitoring Framework is to provide a conceptual framework for monitoring MPDSR programmes rather than prescriptive instructions.**Each country has an existing data and monitoring system and its monitoring needs will vary depending on the national context.**[4]

There are several levels to the monitoring system including facility level, district/regional level, national level, and global level (common/core indicators (see Table 1). For each level of the monitoring system, there are specific indicators to measure output, outcome and impact indicators. The specific indicators each programme uses will vary depending on the data needs, as well as local context, resources and priorities. For the first three levels (facility, district/regional and national levels), indicators will vary depending on programme priorities. For this reason, a catalogue of suggested indicators by level is provided in Annex 17. At global level, we propose a standardized set of common/ core indicators to track progress across all countries. These standardized indicators are shown in Annex 16 and represent a small number of standardized indicators for monitoring all MPDSR programmes. We also propose a list of indicators that require additional testing.

[4] The development of this Monitoring Framework was guided by other monitoring frameworks, including the UNFPA Maternal and Newborn Health Thematic Fund, the WHO Framework for Quality of Care for Maternal and Newborn Health, the WHO Indicator and Monitoring Framework for the Global Strategy for Women's, Children's and Adolescents' Health, and the WHO 100 core indicators. The Monitoring Framework was reviewed by the Global MPDSR Technical Working Group.

Monitoring components

This Monitoring Framework outlines five key levels:

1. **Health facility indicators** – to support facility leadership and coordination functions for monitoring MPDSR activities and improving quality of care in facilities.
2. **District/regional indicators** – to support district/regional leadership and coordination functions for improving and sustaining MPDSR activities at district/regional level.
3. **National indicators** – to support national leadership and coordination functions for improving and sustaining MPDSR activities in the country.
4. **Common/Core indicators** – to provide a common set of standardized indicators for monitoring country performance and for facilitating learning and sharing across countries implementing MPDSR.
5. **Indicators that require additional testing** – to provide a list of indicators that require further testing and research.

Measurement methods and data sources

The data sources for the indicators at each level of the health system will vary depending on the available health information and data systems. Data will be collected using routine, local measurement methods and documentation of MPDSR activities as well as routine systems such as health management information systems (HMIS) and others. Each measurement and data source has inherent strengths and weaknesses that will need to be considered as countries define an optimal and feasible monitoring framework for their national context. The data sources that may contribute to calculation of this Monitoring Framework's indicators include, but are not limited to:

Routine data sources:

- **Patient records/facility registers.** These provide detailed information on patient demographics, care received and health outcomes.
- **Data aggregated within Health Management Information Systems (HMIS) or District Health Management Information System 2 (DHIS2).** Selected data from facility registers are typically aggregated in HMIS (and DHIS2 in some countries). To varying degrees, HMIS can provide routine (e.g. monthly) information on service utilization, treatment of maternal and perinatal complications, number and causes of death, and case fatality rate.
- **Civil registration and vital statistics.** These systems provide data on mortality and population-based denominators used to calculate rates and proportions.
- **Human resources and staff training.** The placement, availability and training of health staff are often routinely tracked at facility, district and/or national levels in human resource information systems.
- **Logistics management information systems (LMIS) and supply chain management.** The availability, distribution and quantity of medicines, commodities and medical supplies are often routinely tracked in LMIS and other supply chain management systems from central warehousing to service delivery points, such as health facilities.

Other data collection sources:

Community surveys/verbal & social autopsies. These provide detailed information on deaths that occur outside of health facilities, including the care received, care-seeking behaviours, and health outcomes.

Documentation of MPDSR activities:

Death case summary reports. These provide a summary of causes and contributing factors for of every notified maternal and perinatal death.

Review committee meeting records. These provide information on review committee activities, including meeting schedules, minutes, attendance and membership, and audit reports, recommendations and implementation of recommendations.

Quality review reports. These reports by the quality improvement team(s) provide information on the quality of the reports at different levels of the health system, including the quality of MPDSR implementation and MPDSR monitoring activities.

Common/core indicators

Annex 16 presents a list of standardized global indicators to facilitate learning across countries implementing MPDSR. These indicators were selected based on the following criteria:

- relevant and useful for most MPDSR stakeholders;
- aligned to the extent possible with standardized global MNH indicators (Every Woman Every Child, Ending Preventable Maternal Mortality (EPMM), Every Newborn Action Plan (ENAP), WHO 100 core indicators) and with data currently being collected by partners;
- clearly provide information regarding whether (or not) health outcomes, care processes or inputs are improving.

These common/core indicators should be collected by all programmes at all levels of implementing MPDSR, in an effort to better track implementation across programmes for both national and global level.

Output	• % of countries with functional national MPDSR steering committee • % of countries with functional district/regional MPDSR steering committees • % of countries with annual report • % of countries with national policy/guideline on MPDSR • % of recommendations implemented in last year, by level
Outcome	• % of expected maternal/perinatal deaths notified to MPDSR system • % of expected maternal/perinatal deaths reviewed by MPDSR steering committee
Impact	• Institutional maternal mortality ratio • Institutional perinatal mortality rate • Maternal mortality ratio* • Perinatal mortality rate* • Number of maternal deaths by cause, ICM-MM[5] • Number of perinatal deaths by cause, ICD-PM[6]

* This indicator can only be reported if MPDSR system includes both facility and community deaths

[5] WHO Application of ICD-10 to deaths during pregnancy, childbirth and the puerperium: ICD-Maternal Mortality (ICD-MM)

[6] WHO Application of ICD-10 to perinatal deaths: ICD-Perinatal Mortality (ICD-PM)

Indicator catalogue

To help district and facility managers prioritize indicators for monitoring, the Monitoring Framework includes a streamlined set of indicators as an indicator catalogue (summarized in Annex 17). The indicator catalogue categorizes indicators by type (output, outcome and impact) and specifies potential data sources for each indicator to help stakeholders design their monitoring framework. The catalogue further describes the purpose, measurement and calculation, source of information, frequency of data collection, and target for each indicator Generally, the data for the indicators in the catalogue will be collected by district managers and/or health staff that work in facilities.

The selection of these indicators and frequency of data collection will vary according to countries' policies and resources. **It not intended that all these indicators should be selected. Rather, national-, district- and facility-level managers should select indicators that are most relevant for the issues being addressed in their programmes, on the basis of what is possible within their information systems.**

Certain data collection methods, such as forms and templates, can be adapted from the MPDSR implementation tools and appendices. Facilities, districts/regions and countries are encouraged to identify and communicate gaps in data collection and sources, with the aim of strengthening their health data systems through MPDSR.

- Inputs: include what needs to be in place to conduct quality MPDSR activities.
- Outputs: includes actual MPDSR activities, e.g., reviews, meetings, improvement plans
- Outcomes: include the process of arriving at the desired results and activities and their effects on the MPDSR system.
- Impact: includes the overall impact of the MPDSR system on maternal and perinatal mortality.

Indicators that require further testing

This list of indicators includes those that are currently being tested. These are listed in Annex 17.

Evaluation of MPDSR

The purpose of this document is to provide guidance on routine monitoring of MPDSR. However, it is also essential to evaluate the MPDSR system, especially if the routine monitoring indicators demonstrate that: 1) one or more of the steps in the MPDSR process is not reaching expected targets; or 2) maternal and/or perinatal mortality is not decreasing. A more detailed evaluation can also be used to assess whether the system could function more efficiently and effectively.

There is a standard set of criteria for evaluating surveillance systems such as the MPDSR. Attributes that are particularly important to evaluate for MPDSR include acceptability, timeliness, data quality and stability.

Criterion	Definition
Acceptability	Willingness of persons and organizations to participate in the MPDSR system.
Timeliness	Time between any two steps in the MPDSR process. The relative importance of timeliness of process intervals varies by MPDSR objective and health event .
Data quality	Completeness and validity of data in the surveillance system.
Stability	Ability to collect, manage and provide data without failure (reliability) and to be operational when needed (availability).

Annex 16: Common/Core measures for monitoring MPDSR across countries

These indicators should be collected from all countries at health facility, district/regional, and national levels.

Output	• % of countries with functional national MPDSR steering committee • % of countries with functional district/regional MPDSR steering committees • % of countries with annual report • % of recommendations implemented in last year, by level
Outcome	• % of expected maternal/perinatal deaths notified to MPDSR system • % of expected maternal/perinatal deaths reviewed by MPDSR steering committee
Impact	• Institutional maternal mortality ratio • Institutional perinatal mortality rate • *Maternal mortality ratio** • *Perinatal mortality rate** • Number of maternal deaths by cause, ICM-MM • Number of perinatal deaths by cause, ICD-PM

* This indicator can only be reported if MPDSR system includes both facility and community deaths

Annex 17: Indicator catalogue for monitoring MPDSR at health facility, district/regional and national levels

It is not intended that ALL these indicators should be collected. Rather, national-, district- and facility-level managers should select indicators that are *most relevant for the issues being addressed in their programmes,* on the basis of what is possible within their information systems at different levels of the health care system. Please refer to the resources in this document for sources of information.

HEALTH FACILITY MEASURES

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
OUTPUTS							
Functional interdisciplinary review committee							
Proportion of planned steering committee meetings conducted	Measures the practice and capacity to perform facility-level reviews	Number of planned steering committee meetings conducted	Number of steering committee meetings planned	Minutes of steering committee meetings, number of usual meeting frequency	Quarterly, 100%		
Proportion of timely[7] steering committee meetings conducted	Measures the timeliness of case reviews at facility level	Number of timely steering committee meetings conducted	Number of steering committee meetings conducted	Schedule of steering committee meetings	Quarterly, >90%	MDSR Technical Guide	
Proportion of steering committee meetings which include interdisciplinary teams (OB/GYN, nurse, midwife, pediatrician, others)	Measures the practice of effective health facility reviews involving all actors in facility working together	Number of steering committee meetings which include all interdisciplinary teams	Number of steering committee meetings conducted	Attendance list with cadres of steering committee meetings	Quarterly, 100%	MDSR Technical Guide	

[7] Timely – immediately after death or within one month of death

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
Proportion of steering committee meetings which include quality improvement (QI) teams	Measures the linkage of MPDSR to QI and other programs	Number of steering committee meetings which include QI teams	Number of steering committee meetings conducted	Attendance list with cadres of steering committee meetings	Quarterly, 100%	MDSR Technical Guide	
Proportion of maternal/ perinatal reviews that include SMART recommendations	Measures use of MPDSR data for likely potential to improve quality of care	Number of maternal/ perinatal reviews that include SMART recommendations	Number of maternal/perinatal reviews conducted	Minutes steering committee meetings	Annually, 100%	MDSR technical guide UNFPA	
Proportion of recommendations implemented	Measures the response and implementation of recommendations	Number of recommendations implemented or show evidence of implementation	Number of recommendations reported	Minutes steering committee meetings, case summary forms	Quarterly, >80%	MDSR technical guide UNFPA	
OUTCOMES							
Maternal and perinatal deaths notified and reviewed							
Proportion of maternal deaths notified[8] through MPDSR system	Measures reporting of data at facility level	Number of maternal deaths notified through MPDSR	Number of maternal deaths at facility	Minutes steering committee meetings, case summary forms, notification forms, HMIS	Quarterly, 100%	ENAP UNFPA MDSR Technical Guidance	

[8] Notified to be defined after UNFPA review of their data

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
Proportion of perinatal deaths notified[2] through MPDSR system	Measures reporting of data at facility level	Number of perinatal deaths notified through MPDSR	Number of perinatal deaths at facility	Minutes steering committee meetings, case summary forms, notification forms, HMIS	Quarterly, 100%		
Proportion of maternal deaths notified through MPDSR that are reviewed at steering committee meetings	Measures the performance of the MPDSR system to review all maternal deaths	Number of maternal deaths notified through MPDSR that are reviewed	Number of maternal deaths notified through MPDSR	Minutes steering committee meetings, case summary forms, HMIS	Quarterly, 100%	ENAP QED UNFPA	
Proportion of perinatal deaths reviewed at steering committee meetings	Measures the performance of the MPDSR system to review perinatal deaths	Number of perinatal deaths that are reviewed	Number of perinatal deaths	Minutes steering committee meetings, case summary forms, HMIS	Quarterly	ENAP QED	
IMPACT							
Number of maternal deaths, by cause (ICD-MM)	Measures the number of maternal deaths and completeness of MPDSR	Number of maternal deaths, by cause	n/a	Minutes steering committee meetings, case summary forms, CRVS	Quarterly	ENAP QED WHO 100 Core EPMM,	

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
Number of deliveries/ total births	Measures the number of deliveries/total births	Number of deliveries/ total births	n/a	Health facility records, summary forms, CRVS, HMIS	Quarterly		
Number of perinatal deaths, by cause (ICD-PM)	Measures the number of maternal deaths and completeness of MPDSR	Number of perinatal deaths, by cause	n/a	Minutes steering committee meetings, case summary forms, CRVS, HMIS	Quarterly	ENAP QED	
Number of stillbirths	Measures results and enables tracking of progress	Number of stillbirths[9]	n/a	Health facility records, summary forms, labour and delivery registers, CRVS, HMIS	Quarterly	GS	Disaggregate by macerated/ antepartum and fresh/ intrapartum as feasible
Number of early neonatal deaths (0–7 days)	Measures the number of early neonatal deaths	Number of early neonatal deaths (0–7 days)	n/a	Minutes steering committee meetings, case summary forms, CRVS	Quarterly		

[9] A stillbirth or fetal death is defined as a baby born with no signs of life after a given threshold; for international comparison, WHO defines stillbirth as birthweight of 1000 g or more, if the birthweight is not available, a gestational age of 28 weeks or more or a length of 35 cm or more (ICD-10). However, countries may use different cut-offs for stillbirth, and the national definition should be used if applicable.

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
Case fatality rate – maternal	Measures the effects of MPDSR program	Number of women with named obstetric conditions admitted to health facility who died	Number of women with named obstetric conditions admitted to health facility	Case records	Quarterly, <1%	ENAP QED	

DISTRICT/REGIONAL MEASURES

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
OUTPUTS							
Trained staff							
Proportion of health facilities with trained staff in MPDSR[10]	Measures capacity of facilities to carry out MPDSR functions	Number of health facilities with adequately trained staff in MPDSR	Number of health facilities	Health facility reports, interviews	Annually	MDSR Technical Guide	Minimum number of staff needed for each facility will depend on the capacity and size of each facility. Details on "adequate" will be defined at country level.

[10] Trained staff "staff who have completed training in MPDSR in the last five years

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
Functional review committee							
Proportion of planned district/regional review steering committee meetings conducted	Measures the practice and capacity to perform reviews	Number of planned district/regional review steering committee meetings conducted	Number of planned district/ regional review steering committee meetings	Minutes of steering committee meetings, scheduled of planned meetings	At least quarterly, 100%		
Proportion of district/ regional steering committee meetings which include interdisciplinary teams (OB/GYN, nurse, midwife, pediatrician, others)	Measures the practice of effective health facility reviews involving all actors in facility working together	Number of steering committee meetings which include all interdisciplinary teams	Number of steering committee meetings conducted	Attendance list with cadres of steering committee meetings	Quarterly, 100%	MDSR Technical Guide	
Proportion of district/ regional steering committee meetings which include quality improvement (QI) teams	Measures the linkage of MPDSR to QI and other programs	Number of steering committee meetings which include QI teams	Number of steering committee meetings conducted	Attendance list with cadres of steering committee meetings	Quarterly, 100%	MDSR Technical Guide	
Data forms, completeness							
Proportion of health facilities with complete registers/ forms or case summaries	Measures reporting of data with detailed and accurate information to use for reviews	Number of health facilities with complete registers/ forms, case summaries	Number of health facilities submitting registers/forms	Health facility forms,	Annually, 95%	QED	
Proportion of SMART recommendations implemented	Measures the response and implementation of recommendations	Number of recommendations implemented at district/regional level	Number of recommendations at district/regional level	Minutes steering committee meetings	Semi-annually, >80%	MDSR technical guide UNFPA	

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
OUTCOMES							
Maternal and perinatal deaths notified and reviewed							
Proportion of health facilities reporting maternal deaths through MPDSR	Measures reporting of data at facility level	Number of health facilities reporting maternal deaths through MPDSR	Number of health facilities	Steering committee meeting minutes	Quarterly, 100%		
Proportion of health facilities reporting perinatal deaths through MPDSR	Measures reporting of data at facility level	Number of health facilities reporting perinatal deaths through MPDSR	Number of health facilities	Steering committee meeting minutes	Quarterly, 100%		
Number of maternal deaths notified through MPDSR	Measures reporting of data at facility level	Number of maternal deaths notified through MPDSR	n/a	Steering committee meeting minutes	Quarterly, 100%	ENAP UNFPA	
Number of perinatal deaths notified through MPDSR	Measures reporting of data at facility level	Number of perinatal deaths notified through MPDSR	n/a	Steering committee meeting minutes	Quarterly, 100%	ENAP UNFPA	
Proportion of maternal deaths notified through MPDSR that are reviewed at district/ regional level	Measures the performance of the MPDSR system to review all maternal deaths	Number of maternal deaths notified through MPDSR that are reviewed	Number of maternal deaths notified through MPDSR	Steering committee meeting minutes	Quarterly, 100%	ENAP QED UNFPA	
Proportion of perinatal deaths reviewed at district/ regional level	Measures the performance of the MPDSR system to review perinatal deaths	Number of perinatal deaths that are reviewed	Number of perinatal deaths notified through MPDSR	Steering committee meeting minutes	Quarterly	ENAP QED	

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
IMPACT							
Number of maternal deaths, by cause (ICD-MM)	Measures the number of maternal deaths and completeness of MPDSR	Number of maternal deaths, by cause	n/a	Minutes steering committee meetings, case summary forms, CRVS	Quarterly	ENAP QED (WHO 100 Core, EPMM,	
Number of deliveries/ total births	Measures the number of deliveries/total births	Number of deliveries/ total births	n/a	Health facility records, summary forms, CRVS	Quarterly		
Number of perinatal deaths, by cause (ICD-PM)	Measures the number of maternal deaths and completeness of MPDSR	Number of perinatal deaths, by cause	n/a	Minutes steering committee meetings, case summary forms, CRVS	Quarterly	ENAP QED	
Number of early neonatal deaths (0–7 days), by cause (ICD-PM)	Measures the number of early neonatal deaths and completeness of MPDSR	Number of early neonatal deaths (0–7 days)	n/a	Minutes steering committee meetings, case summary forms, CRVS	Quarterly		

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
Institutional stillbirth rate	Measures results and enables tracking of progress towards global goals, and captures integration (maternal and perinatal) of MPDSR	Number of stillbirths delivered in facility	Total facility births, per 1,000	Health facility records, summary forms, labour and delivery registers, CRVS	Quarterly		Disaggregate by macerated/ antepartum and fresh/intrapartum as feasible
Institutional maternal mortality ratio	Measures the effects of MPDSR program	Number of maternal deaths in health facilities	Number of deliveries in health facilities (per 100,000 deliveries)	Health facility records, summary forms, CRVS	Annually	ENAP QED (WHO 100 Core, EPMM,	
Institutional perinatal mortality rate	Measures the effects of MPDSR program	Number of perinatal deaths in health facility	Number of total births in health facility (per 1,000 total births)	Health facility records, summary forms, CRVS	Annually	ENAP	

NATIONAL MEASURES

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
OUTPUTS							
Policy for maternal and perinatal death notification and review							
National policy or guideline on maternal death a notifiable event[11]	Measures the national policy on maternal death notification	National policy or guideline in place for notification of all maternal deaths	n/a	National policy, WHO Policy Survey	Annually, yes	MDSR technical guide UNFPA	
National policy on reviewing all maternal deaths	Measures the national policy on maternal death review	National policy or guideline in place for review of all maternal deaths	n/a	National policy, WHO Policy Survey	Annually, yes	MDSR technical guide	
National policy on reviewing perinatal deaths[12]	Measures the national policy on perinatal death review	National policy or guideline in place for review of perinatal deaths	n/a	National policy, WHO Policy Survey	Yes		
Functional national MPDSR committee							
Proportion of planned national review steering committee meetings conducted	Measures the practice and capacity to perform reviews	Number of planned national review steering committee meetings conducted	Number of planned national review steering committee meetings	Minutes of steering committee meetings, scheduled of planned meetings	At least annually, 100%		

[11] Notification should occur within 24 hours for facility-based deaths and 48 hours for community-based deaths.

[12] Policy can include review of all perinatal deaths or a proportion of perinatal deaths.

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
Evidence of national MPDSR coordinator	Measures the capacity for leadership and guidance in MPDSR	National MPDSR coordinator	n/a	National-level staff appointments	Annually, yes	MDSR Technical Guide QED	
Annual report developed							
Completion of national annual MPDSR report	Measures dissemination of maternal and perinatal mortality data and implementation of recommendations	Annual report developed and published including performance of the MPDSR programme, description of implementation of recommendations, and follow up on recommendations from previous year	n/a	Annual report	Annually, yes	UNFPA QED UNFPA	
Implementation of recommendations							
Proportion of recommendations implemented at the national level	Measures the response and implementation of recommendations	Number of recommendations implemented at the national level	Number of recommendations reported at the national level	Implementation plans and records	Semi-annually, >80%	MDSR Technical Guide	
Evidence of integration of recommendations within annual health plans and health-system packages	Measures integration of recommendations at the national level and coordination of health systems and policies	Recommendations from MPDSR reviews included in annual health plans and health-system packages	n/a	Annual health plans and health-system packages	Annually, yes	MDSR Technical Guide	

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
Linkages with routine data systems							
Proportion of maternal deaths identified in MPDSR included in CRVS	Measures the practice and capacity of the CRVS system	Number of reported maternal deaths identified in MPDSR incorporated into CRVS	Number of reported maternal deaths identified in MPDSR	CRVS reports	Annually, 100%	QED	This is defined as deaths included in both MPDSR system and CRVS
Proportion of perinatal deaths identified in MPDSR included in CRVS	Measures the practice and capacity of the CRVS system	Number of reported perinatal deaths identified in MPDSR incorporated into CRVS	Number of reported perinatal deaths identified in MPDSR	CRVS reports	Annually, 100%	QED	This is defined as deaths included in both MPDSR system and CRVS
Proportion of maternal deaths reported in health management information system	Measures the practice and capacity of a national reporting system	Number of reported maternal deaths identified in MPDSR incorporated in health management information system	Number of reported maternal deaths identified in MPDSR	HMIS, routine data systems	Annually, 100%		This is defined as deaths included in both MPDSR system and HMIS
Proportion of perinatal deaths reported in health management information system	Measures the practice and capacity of a national reporting system	Number of reported perinatal deaths identified in MPDSR incorporated in health management information system	Number of reported perinatal deaths identified in MPDSR	HMIS, routine data systems	Annually, 100%		This is defined as deaths included in both MPDSR system and HMIS
OUTCOMES							
Proportion of expected maternal deaths that are notified through MPDSR program in the previous year	Measures the performance of the MDSR system at population level to ensure that all maternal deaths are notified	Number of maternal deaths notified to the MoH through the MPDSR system in the previous year	Estimated number of maternal deaths for previous year	MPDSR annual report, MMEIG estimates	Annually, 100%	UNFPA	

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/notes
Proportion of maternal deaths reviewed in the country in the previous year	Measures the performance of MDSR system at population level	Number of maternal deaths reviewed in the last year	Estimated number of maternal deaths for previous year	MPDSR annual report, MMEIG estimates	Annually, 100%	CARMMA scorecard	
IMPACT							
Institutional maternal mortality ratio	Measures the effects of MPDSR program	Number of maternal deaths in health facilities	Number of deliveries in health facilities (per 100,000 deliveries)	Health facility records, summary forms, CRVS	Annually	ENAP QED (WHO 100 Core, EPMM	
Institutional perinatal mortality rate	Measures the effects of MPDSR program	Number of perinatal deaths in health facilities	Number of total births in health facilities (per 1000 total births)	Health facility records, summary forms, CRVS	Annually	ENAP	
Maternal mortality ratio	Measures the effects of MPDSR program	Number of maternal deaths (facility and community)	Number of live births (per 100,000 live births)	Health facility records, summary forms, CRVS	Annually		This indicator can only be reported in MPDSR system includes facility and community deaths
Perinatal mortality rate	Measures the effects of MPDSR program	Number of perinatal deaths (facility and community)	Number of total births (per 1000 total births)	Health facility records, summary forms, CRVS	Annually		This indicator can only be reported in MPDSR system includes facility and community deaths
Maternal deaths by cause (ICD-MM)	Measures the effects of MPDSR program	Number of maternal deaths by cause		MPDSR annual report, CRVS	Annually	ENAP QED	
Perinatal deaths by cause (ICD-PM)	Measures the effects of MPDSR program	Number of perinatal deaths by cause		MPDSR annual report, CRVS	Annually	ENAP QED	

INDICATORS THAT REQUIRE ADDITIONAL TESTING

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/ Notes
Implementation of four main components of MPDSR	Measures the implementation of MPDSR	The four components of MPDSR are implemented at national level: 1) National guidelines and tools for MPDSR; 2) National policy to notify all maternal deaths[13]; 3) costed national MPDSR plan including in maternal health plan; and 4) functional national MPDSR committee	n/a	MPDSR program reports; WHO Policy Survey	Annually	UNFPA	
Proportion of maternal deaths notified reviewed according to quality standards[14]	Measures the practice and capacity of reviewing death reviews for quality assurance	Number of maternal deaths notified that were reviewed according to quality standards	Number of maternal deaths notified that were reviewed	MPDSR annual report, special study	Annually, 100%	UNFPA	
Proportion of perinatal deaths reviewed according to quality standards[1]	Measures the practice and capacity of reviewing death reviews for Q	Number of perinatal deaths that were reviewed according to quality standards	Number of perinatal deaths that were reviewed	MPDSR annual report, special study	Annually, 100%	UNFPA	

[13] Within 24 hours for deaths in health facilities and within 48 hours for community deaths

[14] Quality standards include: 1) Organized by a M(P)DR committee of 6–10 people selected from a variety of backgrounds; 2) Involving all professionals who took part in managing the case; 3) All findings recorded and reported completely and anonymously, in accordance with the "no name, no blame" principle; 4) Including 'clinical case summary' with the most significant events that took place from before the woman's admission to the health facility until her death; 5) Including a 'systematic case analysis', identifying the causes of death by reviewing the medical cause of death (using ICD-MM); 6) Identifying the various factors/events that may have contributed to the death; 7) Including recommendations and action plan to address gaps and; 8) Having an M(P) DSR session report.

Indicator	Purpose	Numerator	Denominator	Source of information	Frequency of data collection, target	Reference	Remarks/ Notes
Proportion of health facilities with evidence of data analysis and data analysis plan[15]	Measures the practice and capacity to perform data analysis	Number of health facilities with evidence of data analysis and data analysis plan	Number of health facilities	MPDSR summary forms, minutes from facility meetings	Annually, 100%	QED	
Score on meeting of interdisciplinary teams for MPDSR steering committee meetings	Measures the degree of interdisciplinary steering committee membership	Number of interdisciplinary team members present for the steering committee meeting	Number of interdisciplinary teams that are part of steering committee				Based on a score: 1=if one team is present 2=if two teams are present 3=if more than two teams are present

[15] Includes comparing reported versus estimated deaths, comparing/analyzing causes of death, and monitoring whether implemented recommendations change morbidity/mortality.

Annex 18. Ten strategies for promoting a "No Name, No Blame and No Shame" culture and key resources with more information

Strategy	Markers or measures	Level	Key literature (* highlighted in module as example)
Ensure that policy and planning for MPDSR includes national guidelines and policies on how to conduct blame-free MPDSR, and legal frameworks to draw a distinction between the audit process and appropriate disciplinary action	Policy mandate: national MPDSR policy and guidelines Availability of MPDSR tools Legal framework for notifying deaths and involve communities and other sectors	Macro	*Smith H, Ameh C, Godia P, Maua J, Bartilol K, Amoth P et al. Implementing maternal death surveillance and response in Kenya: incremental progress and lessons learned. Glob Health Sci Pract. 2017;5(3):345–54. WHO Global Reproductive, Maternal, Newborn, Child and Adolescent Health Policy Survey: indicates which countries have national MPDSR guidelines (https://www.who.int/data/maternal-newborn-child-adolescent-ageing/national-policies?selectedTabName=Documents, accessed 29 May 2021). E4A. 2012. Maternal death surveillance and response systems: overcoming legal challenges and creating an enabling environment. MDSR Action Network. Presented during 'Interactive MDSR Resource Room' at XXFIGO World Congress of Gynecology and Obstetrics, Rome, Italy, 7-12 October 2012.
Ensure **national prioritization** of prevention of maternal and perinatal deaths	Global and regional commitments (e.g. SDGs) Targets in national health plans	Macro	* Melberg A, Mirkuzie AH, Sisay TA, Sisay MM, Moland KM. "Maternal deaths should simply be 0": politicization of maternal death reporting and review processes in Ethiopia. Health Policy Plan. 2019;34(7):492–8. * Tura AK, Fage SG, Ibrahim AM, Mohamed A, Ahmed R, Gure T et al. Beyond No Blame: practical challenges of conducting maternal and perinatal death reviews in eastern Ethiopia. Glob Health Sci Pract. 2020;8(2):150–4. doi:10.9745/GHSP-D-19–00366.
Harmonize MPDSR in routine monitoring systems to standardize the process and enable accountability	Integrating MPDSR into DHIS or other national routine monitoring systems	Macro, meso, micro	* Biswas A. Shifting paradigm of maternal and perinatal death review system in Bangladesh: a real-time approach to address sustainable developmental goal 3 by 2030. F1000Res. 2017;6:1120. * Purandare C, Bhardwaj A, Malhotra M, Bhushan H, Shah PK. Every death counts: electronic tracking systems for maternal death review in India. Int J Gynaecol Obstet. 2014;127(Suppl 1):S35–9. Smith H, Ameh C, Godia P, Maua J, Bartilol K, Amoth P et al. Implementing maternal death surveillance and response in Kenya: incremental progress and lessons learned. Glob Health Sci Pract. 2017;5(3):345–54.

Strategy	Markers or measures	Level	Key literature (* highlighted in module as example)
Create and advocate for an **overall enabling environment for implementation**, including an organizational culture of learning, accountability and transparency	Address human and material resource shortages across the system Coordination mechanisms Implementing broader quality improvement strategies Data quality assessments Promote MPDSR as a learning experience Prioritize preventative measures Ensure anonymity – e.g. notes and reports – to protect patients and staff involved	Macro, meso	Austin A, Langer A, Salam RA, Lassi ZS, Das JK, Bhutta ZA. Approaches to improve the quality of maternal and newborn health care: an overview of the evidence. Reprod Health. 2014;11(Suppl 2):S1. doi: 10.1186/1742–4755–11-S2-S1. Bandali, S., Thomas, C., Hukin, E., Matthews, Z., Mathai, M., Ramachandran Dilip, T., Roos, N., Lawley, R., Igado, O. & Hulton, L. 2016. Maternal Death Surveillance and Response Systems in driving accountability and influencing change. Int J Gynaecol Obstet, 135, 365–371. * Belizan M, Bergh AM, Cilliers C, Pattinson RC, Voce A & for the Synergy Group. Stages of change: a qualitative study on the implementation of a perinatal audit programme in South Africa. BMC Health Serv Res. 2011;11:243. Bergh AM, Pattinson R, Belizan M, Cilliers C, Jackson D, Kerber K et al. & for the Synergy Group. Completing the audit cycle for quality care in perinatal, newborn and child health. Pretoria: Medical Research Council of South Africa; 2011. Biswas, A., Rahman, F., Eriksson, C., Halim, A. & Dalal, K. 2015. Facility Death Review of Maternal and Neonatal Deaths in Bangladesh. PLoS One, 10, e0141902. de Kok B, Imamura M, Kanguru L, Owolabi O, Okonofua F, Hussein J. Achieving accountability through maternal death reviews in Nigeria: a process analysis. Health Policy Plan. 2017;32(8):1083–91. * Dumont A, Tourigny C, Fournier P. Improving obstetric care in low-resource settings: implementation of facility-based maternal death reviews in five pilot hospitals in Senegal. Hum Resour Health. 2009;7: 61. Lewis G. The cultural environment behind successful maternal death and morbidity reviews. BJOG. 2014;121(Suppl 4):24–31. Lewis G. Emerging lessons from the FIGO LOGIC initiative on maternal death and near-miss reviews. Int J Gynaecol Obstet. 2014;127(Suppl 1):S17–20. Manandhar, D. S. 2004. Perinatal death audit. Kathmandu Univ Med J (KUMJ), 2, 375–83. Richard F, Ouedraogo C, Zongo V, Ouattara F, Zongo S, Gruénais ME et al. The difficulty of questioning clinical practice: experience of facility-based case reviews in Ouagadougou, Burkina Faso. BJOG. 2009;116(1):38–44.

Strategy	Markers or measures	Level	Key literature (* highlighted in module as example)
Strengthen leadership within all participating professional groups at all levels, ensuring engagement with the MPDSR focal point on how to facilitate meetings and mentor others	Facilitation skills for conducting audit meetings Mentorship and supportive supervision Participation of senior staff in the meetings and in the data analysis in order to guide priorities and actions	Meso, Micro	* Bakker, W., van den Akker, T., Mwagomba, B., Khukulu, R., van Elteren, M. & van Roosmalen, J. 2011. Health workers' perceptions of obstetric critical incident audit in Thyolo District, Malawi. Trop Med Int Health, 16, 1243–50. Bergh AM, Pattinson R, Belizan M, Cilliers C, Jackson D, Kerber K et al. & for the Synergy Group. Completing the audit cycle for quality care in perinatal, newborn and child health. Pretoria: Medical Research Council of South Africa; 2011. Dumont A, Tourigny C, Fournier P. Improving obstetric care in low-resource settings: implementation of facility-based maternal death reviews in five pilot hospitals in Senegal. Hum Resour Health. 2009;7:61. Kinney MV, Ajayi G, de Graft-Johnson J, Hill K, Khadka N, Om'Iniabohs A et al. "It might be a statistic to me, but every death matters": an assessment of facility-level maternal and perinatal death surveillance and response systems in four sub-Saharan African countries. PloS One. 2020;15(12):e0243722. Koblinsky M. Maternal death surveillance and response: a tall order for effectiveness in resource-poor settings. Glob Health Sci Pract. 2017;5:333–7. MCSP. Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Nigeria. Washington (DC): Maternal Child Survival Program; 2017. MCSP. Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Rwanda. Washington (DC): Maternal Child Survival Program; 2017. MCSP. Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Zimbabwe. Washington (DC): Maternal Child Survival Program; 2017. MCSP. Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Kagera and Mara Region, Tanzania. Washington (DC): Maternal Child Survival Program; 2017. Purandare C, Bhardwaj A, Malhotra M, Bhushan H, Shah PK. Every death counts: electronic tracking systems for maternal death review in India. Int J Gynaecol Obstet. 2014;127(Suppl 1):S35–9. * Rhoda NR, Greenfield D, Muller M, et al. Experiences with perinatal death reviews in South Africa – the Perinatal Problem Identification Programme: scaling up from programme to province to country. BJOG. 2014;121(Suppl 4):160–6. van Hamersveld KT, den Bakker E, Nyamtema AS, van den Akker T, Mfinanga EH, van Elteren M et al. Barriers to conducting effective obstetric audit in Ifakara: a qualitative assessment in an under-resourced setting in Tanzania. Trop Med Int Health. 2012;17(5):652–7.

Strategy	Markers or measures	Level	Key literature (* highlighted in module as example)
Nurture team relationships among those who participate in audit through continuous engagement, a teamwork approach, support from hospital management, deliberate efforts and strategies, such as mentorship	Mentorship, clinical outreach and supervisory activities through district engagement Teams: committees formed and multidisciplinary Relationship between committee members	Meso, Micro	Agaro C, Beyeza-Kashesya J, Waiswa P, Sekandi JN, Tusiime S, Anguzu R et al. The conduct of maternal and perinatal death reviews in Oyam District, Uganda: a descriptive cross-sectional study. BMC Womens Health. 2016;16:38. * Dartey AF. The role of midwives in the implementation of maternal death review (MDR) in health facilities in Ashanti region, Ghana. Cape Town: University of the Western Cape; 2012. Hofman JJ, Mohammed H. Experiences with facility-based maternal death reviews in northern Nigeria. Int J Gynaecol Obstet. 2014;126:111–4. MCSP 2017. Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Nigeria. Washington, DC: Maternal Child Survival Program. MCSP 2017. Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Rwanda. Washington, DC: Maternal Child Survival Program. MCSP 2017. Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Zimbabwe. Washington, DC: Maternal Child Survival Program. MCSP 2018. Assessment of Maternal and Perinatal Death Surveillance and Response (MPDSR) Implementation in Kagera and Mara Region, Tanzania. Washington, DC: Maternal Child Survival Program. Muffler N, Trabelssi Mel H, De Brouwere V. Scaling up clinical audits of obstetric cases in Morocco. Trop Med Int Health. 2007;12(10):1248–57. * Purandare C, Bhardwaj A, Malhotra M, Bhushan H, Shah PK. Every death counts: electronic tracking systems for maternal death review in India. Int J Gynaecol Obstet. 2014;127(Suppl 1):S35–9.

Strategy	Markers or measures	Level	Key literature (* highlighted in module as example)
Ensure that audit meetings take place regularly and staff regularly attend. The literature shows that the more people attend, the more practice they have and the more embedded the process becomes	Meeting frequency Incentivize attendance – e.g. staff receive professional credit points for participation or attending meetings is part of work expectations	Meso	* Dartey AF. The role of midwives in the implementation of maternal death review (MDR) in health facilities in Ashanti region, Ghana. Cape Town: University of the Western Cape; 2012. Kinney MV, Ajayi G, de Graft-Johnson J, Hill K, Khadka N, Om'Iniabohs A et al. "It might be a statistic to me, but every death matters": an assessment of facility-level maternal and perinatal death surveillance and response systems in four sub-Saharan African countries. PloS One. 2020;15(12):e0243722. Lewis G. Emerging lessons from the FIGO LOGIC initiative on maternal death and near-miss reviews. Int J Gynaecol Obstet. 2014;127(Suppl 1):S17–20. * MCSP 2017. Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Zimbabwe. Washington, DC: Maternal Child Survival Program. * Tayebwa E, Sayinzoga F, Umunyana J, et al. Assessing Implementation of Maternal and Perinatal Death Surveillance and Response in Rwanda. International journal of environmental research and public health 2020; 17(12).
Put in place a **code of conduct or "audit charter"** with clear rules about the purpose of meetings, expected behaviour during meetings and the confidentiality of meetings	Staff involved in MPDSR commit to never sharing the information Review committee members sign or verbally consent to a non-disclosure confidentiality agreement Publication of proceedings are anonymous	Meso	* Congo B, Sanon D, Millogo T, Ouedraogo CM, Yaméogo WME, Meda ZC et al. Inadequate programming, insufficient communication and non-compliance with the basic principles of maternal death audits in health districts in Burkina Faso: a qualitative study. Reprod Health. 2017;14(1):121. Kinney MV, Ajayi G, de Graft-Johnson J, Hill K, Khadka N, Om'Iniabohs A et al. "It might be a statistic to me, but every death matters": an assessment of facility-level maternal and perinatal death surveillance and response systems in four sub-Saharan African countries. PloS One. 2020;15(12):e0243722. Lewis G. Emerging lessons from the FIGO LOGIC initiative on maternal death and near-miss reviews. Int J Gynaecol Obstet. 2014;127(Suppl 1):S17–20. * Richard F, Ouedraogo C, Zongo V, Ouattara F, Zongo S, Gruénais ME et al. The difficulty of questioning clinical practice: experience of facility-based case reviews in Ouagadougou, Burkina Faso. BJOG. 2009;116(1):38–44.

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Promote **individual awareness** of roles and responsibilities, and **competence** to complete tasks through on-the-job capacity-development linked to implementation of a non-blaming approach	Competencies of managers, supervisors, providers to analysis and interpret data and information Confidence of and capability of health workers to complete and analyse deaths Strategy for staff orientation to MPDSR	Micro	* Armstrong CE, Lange IL, Magoma M, Ferla C, Filippi V, Ronsmans C. Strengths and weaknesses in the implementation of maternal and perinatal death reviews in Tanzania: perceptions, processes and practice. Trop Med Int Health. 2014;19:1087–95. * Belizan M, Bergh AM, Cilliers C, Pattinson RC, Voce A & for the Synergy Group. Stages of change: a qualitative study on the implementation of a perinatal audit programme in South Africa. BMC Health Serv Res. 2011;11:243. Bergh AM, Pattinson R, Belizan M, Cilliers C, Jackson D, Kerber K et al. & for the Synergy Group. Completing the audit cycle for quality care in perinatal, newborn and child health. Pretoria: Medical Research Council of South Africa; 2011. * Muffler, N., Trabelssi Mel, H. & De Brouwere, V. 2007. Scaling up clinical audits of obstetric cases in Morocco. Trop Med Int Health, 12, 1248–57. Richard F, Ouedraogo C, Zongo V, Ouattara F, Zongo S, Gruénais ME et al. The difficulty of questioning clinical practice: experience of facility-based case reviews in Ouagadougou, Burkina Faso. BJOG. 2009;116(1):38–44.

Strategy	Markers or measures	Level	Key literature (* highlighted in module as example)
Engage communities in awareness about reporting and participation in MPDSR verbal and social autopsies	Building community awareness and community sensitization. Create an enabling environment for community MPDSR Informed consent to ensure freedom of community to speak and ethics Confidentiality, engagement and relationship between health-care providers and the community. Prioritize role of MPDSR focal person to facilitate community MPDSR Social autopsy serves as a health promotion tool for the community to address maternal and perinatal death	Micro	Biswas A, Ferdoush J, Abdullah ASM, Halim A. Social autopsy for maternal and perinatal deaths in Bangladesh: a tool for community dialog and decision making. Public Health Rev. 2018;39(1). Biswas A. Shifting paradigm of maternal and perinatal death review system in Bangladesh: a real-time approach to address sustainable developmental goal 3 by 2030. F1000Res. 2017;6:1120. * Biswas A, Halim MA, Dalal K, Rahman F. Exploration of social factors associated to maternal deaths due to haemorrhage and convulsions: analysis of 28 social autopsies in rural Bangladesh. BMC Health Serv Res. 2016;16(1):659. Biswas A, Rahman F, Eriksson C, Halim A, Dalal K. Social autopsy of maternal, neonatal deaths and stillbirths in rural Bangladesh: qualitative exploration of its effect and community acceptance. BMJ Open. 2016;6(8):e010490. Biswas A, Rahman F, Halim A, Eriksson C, Dalal K. Experiences of community verbal autopsy in maternal and newborn health of Bangladesh. HealthMED. 2015;9(8):329–38. * Biswas A, Rahman F, Eriksson C, Halim A, Dalal K. Facility death review of maternal and neonatal deaths in Bangladesh. PLoS One. 2015;10(11):e0141902. Biswas A, Rahman F, Eriksson C, Dalal K. Community notification of maternal, neonatal deaths and still births in Maternal and Neonatal Death Review (MNDR) system: experiences in Bangladesh. Health. 2014;6(6):2218–26. Biswas A, Rahman F, Halim A, Eriksson C, Dalal K. Maternal and Neonatal Death Review (MNDR): a useful approach to Identifying appropriate and effective maternal and neonatal health initiatives in Bangladesh. 2014;6:1669–79. Biswas A. Social autopsy as an intervention tool in the community to prevent maternal and neonatal deaths: experiences from Bangladesh. MDSR Action Network. June 2016. Biswas A. Maternal and Perinatal Death Review (MPDR): experiences in Bangladesh. Geneva: World Health Organization; 2015 (http://www.who.int/maternal_child_adolescent/epidemiology/maternal-death-surveillance/case-studies/bangladesh-study/en/, accessed 29 May 2021). Halim A, Utz B, Biswas A, Rahman F, van den Broek N. Cause of and contributing factors to maternal deaths; a cross-sectional study using verbal autopsy in four districts in Bangladesh. BJOG. 2014;121(Suppl 4):86–94. Mahato PK, Waithaka E, van Teijlingen E, Raj Pant P, Biswas A. Social autopsy: a potential health-promotion tool for preventing maternal mortality in low-income countries. WHO South-East Asia J Public Heal. 2018;7(1):123–95.

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