Maternal and Perinatal Death Surveillance and Response

(MPDSR)

Guideline

2015

Ministry of Health and Population
Department of Health Services
Family Health Division
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Reproduction marks the joy of a lifetime for the mother as well as her family. But, this physiological phenomenon is associated with a number of possible outcomes that include the risk of disability and death for the mother and her baby, especially in middle and low-income countries. Maternal deaths pose tremendous adverse psycho-social effects on the families and the quality of life of their children and dependents. This in turn affects the wellbeing of her family and hence, the society.

Nepal has seen a significant reduction in maternal and newborn mortality, and there is evidence to show that the health status is improving. Despite efforts made by the health sector, maternal and infant mortality is still high, primarily due to pregnancy and childbirth related complications and associated delays. Methods to prevent and treat maternal and perinatal complications are known, and most deaths are preventable if these preventive and therapeutic methods are provided/applied at the right place and time. While Nepal has been exercising Maternal and Perinatal Death Review (MPDR) for a long time, sufficient progress has not been made.

In many countries, particularly the developing ones, the vital registration system is either incomplete or unreliable, and maternal and perinatal mortality estimates are based mostly on statistical models. These estimates increase global awareness on the problems, but they do not provide the information required for a targeted and timely response. The Commission on Information and Accountability (CoIA) works to track the progress on resources and results in achieving the goals of the UN Secretary-General’s Global Strategy on Women’s and Children’s Health. It emphasizes the three interconnected processes of monitoring, reviewing and taking action, which are aimed at learning and continuous improvement in life saving interventions. The concept of CoIA has been adapted in Nepal as Country Accountability Roadmap Nepal (CARN).

MPDSR is a new concept for Nepal. It is based on the principles of public health surveillance and is a form of continuous surveillance that promotes routine identification and notification of maternal and perinatal deaths. This helps in the quantification and determination of the causes and the ways to avoid maternal and perinatal deaths and thus provide better information for action.

I would like to request all users to comply with this guideline by abiding with the directions in order to improve public health and other socio economic interventions to fulfill the accountability and responsibility towards people of Nepal.

Secretary
Ministry of Health and Population
Nepal
Acknowledgement

Nepal has shown significant progress in reduction of Maternal and perinatal mortality in the past with its commitment towards achieving targets set by periodic plans and global endeavors. Despite its consistent and regular progress in maternal and child health indicators, maternal and child death continues to be a major public health problem. It has been observed that most of these deaths were preventable if timely intervention had taken place. Thus, with the target of reducing maternal and perinatal mortality due to preventable causes, technical guidelines have been formulated. These guide and support the health care providers working to improve maternal and neonatal health and developing a local and viable mechanism to reduce the deaths.

The Ministry of Health and population expresses immense pleasure in placing this document as a set of directives and processes to innovate, functionalize and groom a self-reliant and sustainable system for improving women and child health.

The credit and gratitude for the development of this technical guidance and implementation plan for MPDSR goes to numerous contributors without whom this document could not have been completed. I especially appreciate the leadership shown by Dr. Pushpa Chaudhary (Director, FHD), Dr. Kiran Regmi (Gyne/Obs Consultant, MoHP) who paved the way for developing the guidelines. My sincere thanks goes to Mr. Paban Kumar Ghimire (Senior Demographer, FHD) and his technical team whose tireless efforts made this upbringing a success. I am thankful to Dr. Shilu Aryal, Mr. Bhogendra Raj Dotel, all the members of Family Health Division and contributors whose efforts have materialized. My special thanks goes to Dr. Meera Upadhyay and WHO for technical and financial support under the Country Accountability Roadmap of Nepal (CARN) designed to achieve the targets set by Commission on Information and Accountability (CoIA) towards women and children. I appreciate the performance shown by Dr. Surakshha Thapa who provided technical consultancy through Development and Research Network Pvt. Ltd. All the direct and indirect contributors deserve appreciation for their support to bring this guideline into shape.

I am sure that the guidelines will provide comprehensive directions to set and make functional the mechanism to explore the issues hindering women and newborn from enjoying health rights. The Ministry of health and Population expresses its commitment and solidarity to improve the quality of life of the Nepalese people.

Director General
Department of Health Services
Acronyms

AFP  Acute Flaccid Paralysis
ANC  Antenatal Care
BTN  Beyond the Numbers
CARN  Country Accountability Roadmap Nepal
CBR  Crude Birth Rate
CDC  Centre for Disease Control and Prevention
CHD  Child Health Division
CHWs  Community health Workers
CoIA  Commission on Information and Accountability for Women’s and Children’s Health
DoHs  Department of Health service
DPHO  District Public Health office
eCODIRS  Electronic Cause of Death Integrated Reporting System
EDP  External Development Partner
FHD  Family Health Division
GoN  Government of Nepal
ICD  International Classification of Diseases
IMCI  Integrated Management of Childhood Illness
MCH  Maternal and Child Health
MDG  Millennium Development Goal
MDR  Maternal Death Review
MPDR  Maternal Perinatal Death Review
MPDSR  Maternal Perinatal Death Surveillance and Response
MMMS  Maternal Mortality and Morbidity Survey
MMR  Maternal Mortality Ratio
MoHP  Ministry of Health and Population
MPDR  Maternal and Perinatal Death Review
NAN  Nursing Association of Nepal
NDHS  Nepal Demographic Health Survey
NEPAS  Nepal Paediatric Society
NESOG  Nepal society of Obstetrician and Gynaecologists
NFHS  National Family Health Survey
NHSP  Nepal Health Sector Program
NHSSP  Nepal Health Sector Support Program
NMMMS  National Maternal Mortality and Morbidity Study
NSMNH-LTP  National Safe Motherhood Newborn Health-Long Term Plan
NSMP  Nepal Safer Motherhood Project
NMPDRC  National Maternal and Perinatal Death Review Committee
PDR  Perinatal Death Review
PHCC  Primary Health Care Center
RH  Reproductive Health
SSMP  Support to Safe Motherhood Programme
TBA  Traditional Birth Attendants
UNFPA  United Nation Fund for Population activities
UNICEF  United Nations Children’s Fund
VA  Verbal Autopsy
VERS  Vital Events Registration System
VR  Vital Registration
WHO  World Health Organization
WRA  Women of Reproductive Age
1.0. Introduction

**Background**

Women and child health is the reflection of the socio-economic situation of the society and a country in large. Happiness and prosperity of the family evolve around the health of women and delivered through enchanting smile of the babies. But natural reproduction process sometimes results unexpectedly worst and scenario turns tragic.

A mother’s death has an immense adverse impact on the survival and development of her children, especially infants. This in turn affects the wellbeing of her family. Neonatal deaths and stillbirths arise from poor maternal health, inadequate care during pregnancy, inappropriate management of complications during pregnancy and delivery, poor hygiene during delivery and the first critical hours after birth, and lack of newborn care. Cultural factors such as women's status in society, their nutritional status at the time of conception, early childbearing, short birth spacing and harmful practices such as inadequate cord care, letting the baby stay wet and cold, discarding colostrum and feeding other foods, also interact in ways that are not always clearly understood (WHO, 2006b).

Maternal mortality continues to be one of the major causes of death among women of reproductive age in many developing countries (WHO Factsheet 334 updated September 2013) (1). Globally, an estimated 287,000 women died from pregnancy and complications in 2010, 99% of them in developing countries (2,3). Reported maternal mortality underestimates the true magnitude by up to 30% worldwide and by as much as 70% in some countries (4,5). Most of these deaths could be avoided if preventive measures were taken and adequate care was available (UNICEF, 2012) (6).

World Health Organization estimates that over 130 million babies are born every year, and more than six million (6) infants die before their fifth birthday while almost five million die (WHO 2012) (7) before their first. It has also been estimated that almost three million babies die in the early neonatal period while, 2.6 million babies are stillborn per year worldwide (WHO 2009) (8), of which one in three deaths occur during delivery and could be largely prevented.

The cumulative risk of maternal death can be as high as one in 16 in developing countries, compared with one in 3800 in developed countries (9). Likewise, approximately 90% of the 5.7 million perinatal deaths suffered globally occur in developing countries (WHO 2006b). Despite progress made in reducing maternal, infant and perinatal deaths due to various safe motherhood initiatives, much still needs to be done in most developing countries (WHO, 2007).

In Nepal, the MMR decreased substantially from 539 per 100,000 live births in 1996 (NFHS) to 170 per 100,000 live births in 2010 (WHO) (WHO 2010). The under-five mortality declined from 139 in 1996 to 54 in 2011. Infant mortality declined from 93 in 1996 to 46 in 2011. Neonatal mortality declined from 58 in 1996 to 33 in 2011, while the Perinatal Mortality Rate declined from 45 in 2006 to 37 per 1,000 pregnancies in 2011 (NDHS 2011).
Improvement in maternal health services has been the key factor in reducing the country's MMR and has contributed to the improvement in infant and child survival as well. Due to continued government encouragement through free delivery services and financial incentives for transportation, the percentage of births taking place in health facilities has doubled in the past five years (from 18 percent in 2006 to 35 per cent in 2011).

It is therefore important to get information to better understand what can be done to prevent maternal deaths in addition to having statistics on maternal mortality. Facility and community based maternal death reviews have been a source of information in the past. However there is an urgent need to systematize the collection and generation of information in this area. These guidelines on maternal death surveillance and response will help to track the path of every woman who dies in a health facility and in community and identify avoidable factors that could improve the quality of care in future. This process will also help to identify key actions required for the health sector and community for improving clinical outcomes.

Past Efforts

There have been substantial efforts in the past to review the maternal and perinatal deaths since the early 1990s.

1990 MDR designed by the Demography Section, FHD with technical support from WHO and implemented the MDR in Paropakar Maternity Hospital.
1996/97 MDR as part of Nepal MMM study was implemented in Kailali, Okhaldhunga and Rupandehi.
2002/03 Doctors and nurses in public hospitals, supported by the NSMP, UNICEF and NESOG, trained for MDR.
2003 MDR revised, PDR introduced and instruction manual prepared by the Demography Section, FHD with support from WHO.
2006 NMPDRC implemented MPDR in 6 hospitals.
2008/09 MDR tool modified as part of second MMM study with technical support from SSMP.
2011/12 MPDR expanded to 5 more hospitals by FHD, reaching to 21 hospitals.
2013 MPDR process adopted by 42 hospitals; FHD revised the MDR and PDR tools.

Maternal Perinatal Death Surveillance and Response (MPDSR)

Maternal Perinatal Death Surveillance and Response (MPDSR) is a form of continuous surveillance process that links health information system and quality improvement processes from local to national levels. It includes routine identification, notification, quantification and determination of causes and avoidability of all maternal and perinatal deaths, as well as the use of this information to respond with actions that will prevent future deaths. Surveillance is instrumental for planning, implementation and evaluation of public health practices. Reduction of preventable maternal mortality is the goal of MPDSR.
The “R” of MPDSR focuses on the response, the action portion of surveillance. MPDSR underlines the critical need to respond to every maternal and perinatal death, so that the information obtained from that death might be acted upon to prevent future deaths. The notification of every maternal and perinatal death also permits the measurement of maternal mortality ratios and perinatal mortality and the real-time monitoring of trends that provide countries with evidence about the effectiveness of interventions.

However, implementation of MPDSR depends on the extent to which MDR and MPDR systems have been implemented and the quality of information that is being received from them. MPDSR will build on the existing MDR and MPDR system and help to improve the quality and quantity of information as well as pave way for appropriate multi-sectoral actions.

**Figure 1.1: Maternal perinatal death surveillance and response cycle**

- Identify cases
- Collect information
- Analyze results
- Recommendations for actions
- Evaluate and refine
Rationale for MPDSR

In order to achieve MDG 5, Nepal needs to reduce its MMR from 190/100,000 live births in 2013 (WHO) to 134/100,000 live births by 2015. This is a challenge for Nepal. However, with the shift in the burden of maternal deaths to health facilities from communities, there is an opportunity for putting more effort to explore the causes of maternal deaths in health facilities, identify the avoidable factors, missed-opportunities and sub-standard care, and take evidence based corrective actions to improve the quality of services (NMMMS, 2008/2009).

MPDSR takes into consideration key components of the UN Global Strategy for Women’s and Children’s Health (10) and The Commission on Information and Accountability (CoIA). One of CoIA’s key points is to get better information for producing better results. It recommends setting up a health system that efficiently combines data from facilities, administrative sources and surveys (10).

The UN Commission on the Status of Women aims to eliminate preventable maternal mortality and morbidity (11) through universal access to family planning methods, skilled birth attendance and basic and comprehensive emergency obstetric care.

MPDSR is the basis of any strategy adopted to eliminate preventable deaths. It provides information about avoidable factors that contribute to maternal and perinatal deaths and uses the information to guide actions that must be taken at the community level, within the formal health-care system, and at the inter-sectoral level (i.e. in other governmental and social sectors) that are critical for preventing similar deaths in the future.

Facility-based MDR systems are, qualitative, in-depth investigations of the causes of, and circumstances surrounding, maternal and perinatal deaths that occur in health-facilities (9) Community- based MDR systems (Verbal Autopsy) are a method of finding out causes of death and ascertaining the personal, family, or community factors that may have contributed to the death.

MPDSR is an extension of the work done to implement MDR and MPDR that promotes understanding of the events surrounding maternal and perinatal deaths and improves maternal and perinatal death notification. MPDSR also stresses on the need to collect data on maternal deaths in the facility as well as community and perinatal deaths in the health facility and use the information to give a clear picture of the weaknesses in the health-care delivery system. It emphasizes the importance of data analyses, use of the findings for response, accountability for the response and provision of feedback to partners who are involved in maternal and child health improvement. It encourages a more robust response thus giving maternal and perinatal mortality a greater consideration.

Users of the guideline

This document has been liberally adapted from existing WHO guidelines and revised for incorporating perinatal death review and response as well as contextual issues. It is meant to be a guidance document for all the health professionals, health-care planners, managers, and policy makers. It sets out the goals and objectives of MPDSR and how to set up MPDSR system to strengthen health care delivery.
2.0. Goal and objectives

The primary goal of MPDSR is to eliminate preventable maternal and perinatal mortality by obtaining and using information on each maternal and perinatal death to guide public health actions and monitor their impact.

It strives to provide information that can be used to develop programmes and interventions for reducing maternal and perinatal mortality and improving quality of care.

**Overall objectives:**

- To provide information that effectively guides immediate as well as long-term actions to reduce maternal mortality at health facilities and community and perinatal mortality at health facilities.
- To count every maternal and perinatal death, permitting an assessment of the true magnitude of maternal and perinatal mortality and the impact of actions to reduce it.

**Specific objectives:**

1. To collect accurate data on all maternal and perinatal deaths, including:
   a. Number- identify & report all maternal and perinatal deaths
   b. Causes of death & contributing factors- review all maternal and perinatal deaths (e.g. facility records, verbal autopsies, MPDR)

2. To analyze & interpret the data collected, including:
   a. Trends in maternal and perinatal mortality
   b. Causes of death (medical) & contributing factors (quality of care, non-medical factors)
   c. Avoidability of deaths, focusing on those factors that can be remedied
   d. Risk factors, groups at increased risk, and mapping of maternal and perinatal deaths to different risk groups
   e. Demographic & socio-economic contexts

3. To use the data to make evidence-based recommendations for actions to reduce maternal and perinatal mortality. Recommendations may include topics like:
   a. Community education and involvement
   b. Timeliness of referrals
   c. Access to & delivery of services
   d. Quality of care
   e. Training needs of health personnel/ protocols
   f. Regulations & policies
   g. Use of resources where they are likely to have an impact

4. To disseminate findings & recommendations to the civil society, health personnel, decision makers and policy makers to increase awareness about the magnitude, social effects and preventability of maternal and perinatal mortality.

5. To ensure that actions take place by monitoring the implementation of recommendations
6. To inform health programme managers on the effectiveness of interventions and their impact on maternal and perinatal mortality.

7. To allocate resources effectively and efficiently by identifying specific needs.

8. To enhance accountability for maternal and infant/ neonatal health.

9. To improve maternal and perinatal mortality statistics & support to vital statistics / civil registration records.

10. To guide & prioritize research related to maternal and perinatal mortality
3.0. MPDSR overview

MPDSR is a continuous surveillance cycle that is designed to provide real-time, quality and actionable data on maternal and perinatal mortality, causes of death and contributing factors. It focuses on using the findings to plan appropriate and effective preventive actions. It aims to identify, notify and review all maternal deaths in communities as well as facilities and perinatal deaths in facilities, thus providing information to develop effective interventions based on data that will reduce maternal and perinatal mortality and permit the measurement of their impact.

1. Identification and notification on continuous basis:

Deaths of women aged 12-55 years due to any cause occurring in the community have to be identified by the notifier then verified if those deaths are suspected maternal deaths fulfilling the following criteria; if the women died

- while she was pregnant
- during delivery or
- within 42 days of delivery

Suspected maternal and perinatal deaths in facilities need to be identified followed by immediate notification (within 24 hours) to the concerned district authorities.

2. Review of maternal deaths by maternal perinatal death review committees in the local health facility:

Local review committee has to examine the medical and non-medical contributing factors that could have led to the maternal death, assess the avoidability, develop recommendations for preventing future deaths and implement the recommendations immediately.

3. Analysis and interpretation of aggregated findings from reviews:

Reviews for all maternal deaths by case and perinatal deaths in aggregate have to be done at the district level and reported to the regional and national level. Based on the aggregated and analyzed data, priority recommendations for action have to be made.

4. Respond and monitor response: Recommendations made by the review committee and those based on the aggregated data have to be implemented. Actions may be solution oriented and targeted at the community, facility or inter and multi sectoral level. Monitoring should be done regularly to ensure that recommended actions are being adequately implemented.

Monitoring and evaluation (M & E) should be an ongoing, continuous process at all levels of the MPDSR cycle. M & E plays a vital role in ensuring that processes are in place, recommended actions take place, and also help to improve the quality and completeness of information.
The MPDSR cycle comprises of four vital steps (Figure 3.1)

*Figure 3.1: The MPDSR process*

Since the system is built on a complex process of identification of events at different places and responses made by authorities based on their capacity, authority and resources, it involves various stakeholders. MPDSR takes up the prevailing MPDR in the hospitals and adds up the features of MDSR from the community integrating both the systems at district level MPDSR committee, thus creating a mixed framework. Keeping in view the hierarchical organizational structure, the system is built on the following process.
Deaths among women aged 12-55 yrs due to all causes and suspected maternal deaths
4.0. Components of MPDSR

MPDSR aims to capture all maternal deaths in the community as well as facilities, and all maternal and perinatal deaths in facilities. There are some key components in this guidance that help to understand the stepwise approach of the MPDSR process. The various components are described below:

4.1. Identification and notification of maternal and perinatal deaths

The first step in MPDSR is identification and notification of deaths. Figure 4.1. gives an overview of the steps taken for the identification and notification of deaths in women aged 12-55 years due to any cause, and perinatal deaths. Then suspected maternal deaths will then be identified from all causes of deaths, and VA conducted.

**Figure 4.1 : Flow diagram of MPDR and MPDSR**

**Community deaths**
- Identify all deaths of women aged 12-55, filter all suspected maternal deaths and notify to the focal point within 24 hrs of knowledge of death
- Conduct Verbal Autopsy within 21 days of death
- VA forms reviewed by concerned facility and district MPDSR team
- At district level, VA data entry in the software

**Facility deaths**
- Identify and notify maternal deaths to the district focal point within 24 hrs of occurrence of death
- Fill MPDR form
- Conduct Maternal and Perinatal Death review and complete the MPDR form with recommendations
- Data entry in the software, by hospital,
- D(P)HO
  - Data management and analysis
**Community Level**

Maternal Death Surveillance and Response starts in the community, but perinatal death is reviewed only in the facilities and not reported from the community due to cumbersome nature of work.

**Identification, Notification and Primary Verification of maternal death:** All the deaths among women aged 12-55 years occurring in the community have to be identified and notified to the nearest public health facility, then the HF has to verify if death occurred during pregnancy, intra partum or post partum period (within 42 days of delivery) and notify within 24 hrs of death or knowledge of death to the district focal point.

**Methods of notification:**

- Calling or messaging
- Using written notification forms/ verbal notification
- Email/ fax

**Notifiers:**

FCHV, family members, teachers, female ward members and religious leaders.

**Verbal autopsy:**

VA of only suspected maternal deaths have to be conducted within 21 days of death by the VA team comprising of at least 2 members. Report on maternal death in HMIS has to be counted only after receiving VA report confirming maternal death. All the completed VA forms have to be sent to D(P)HO via the HMIS information flow system. Two copies of VA forms have to be filled. One copy will be with the local facility and the other copy will be sent to the district by VA team. VA analysis has to be done at the facility as well as district by MPDSR team.

**Where VA should be done?**

VA of the person who was closest to the deceased and present with deceased woman at the time of death has to be done at the place of death. If death occurs in another community, which is not the native community of residence of the deceased woman, VA has to be done at the place of death. If death occurs during referral or transportation, in a district other than the usual place of residence, VA should be done at the native district of residence of the deceased woman. Completed VA forms have to be sent with HMIS report to D(P)HO by the local health facility after matching with HMIS report. VA of maternal deaths and the number of maternal deaths in the community reported in HMIS should be tallied on monthly basis.

The VA team has to take the footprint of the location of residence of the deceased woman with Global Positioning System (GPS) machine using GIS technology.

**Review at district:** All the VA forms have to be reviewed by the district MPDSR team by 10th of every month.
**Data entry at district level:** Data has to be entered in the standard software provided, by 15th of every month, by statistics officer or statistics assistant. The data entered has to be shared among all concerned members and sent to the central level.

*In case of maternal and perinatal deaths in the birthing centre/PHCC, Maternal and Perinatal Death Review (MPDR) along with VA for maternal death have to be conducted by the district VA team within 21 days of death. The completed VA forms are then submitted to concerned health facility and D(P)HO. Facility has to incorporate that in the HMIS report and along with VA and MPDR forms, including local actions taken and recommendation, has to send it to the district.*

**Hospital Level**

Maternal death identification, notification, filling the MPDR form filling and maternal and Perinatal Death Review have to be done in the hospitals.

**Notification of maternal death:** All suspected maternal deaths have to be notified within 24 hrs of their occurrence to the DPHO based MPDSR focal point. If the deceased woman is from another district, the hospital has to notify the deceased persons’ district (district of residence) authority (DPHO) as well, which will then notify her local health facility. Hospitals also should include “zero reporting” in the HMIS monthly report if no death occurred in that particular month.

**Notifiers:**

Doctors, medical record officer/assistant, nurses, paramedics

**Review:** Review of completed MPDR forms has to be done by the hospital MPDR Committee. The review process is given below.

**Verbal Autopsy:**

VA has to be done by the D(P)HO based VA team within 21 days of maternal death for the cases notified by hospitals or local health facility in their district.

If there are “brought dead” from other district or death occurs outside the country, VA has to be done in the district of residence of the deceased woman. But, if death occurs in another district, then VA has to be done with key informant present at the time of death in the district where death occurred.

Data from the community and data from the facility have to be sent to D(P)HO by 7th of every month. At D(P)HO, the data will be completed and checked to avoid duplication.

A focal person at district level has to be given the responsibility to collect additional information to classify deaths that appear to be due to incidental or accidental causes (E.g. Vehicle accident, homicide).

In case of deaths that do not appear to be clear-cut maternal deaths, the MPDSR district committee will be responsible for reviewing the circumstances and confirming maternal deaths. (i.e. whether the death was related to or aggravated by pregnancy and/or its management).
Sources of information
There are three major sources of information on maternal and perinatal deaths;

1. Health-care facility: Where the deceased was admitted or treated. The data collector has to review medical records and interview staff who had attended the deceased and were present at the time of death. Staff identification should be protected and confidentiality should be strictly maintained.

2. Community: Death in the community is considered when women die while/after giving birth at home or elsewhere other than birthing centre or hospital or on their way to a health-care facility; or die during pregnancy at home, on the way to facility or elsewhere other than health facility. In this case, VA is the method for obtaining information by interviewing the family members of the deceased or close community members. Again confidentiality should be strictly maintained.

3. Vital event registration system (VERS): This is an important source of supplemental information on maternal deaths.
4.2. Maternal Perinatal Death Review process and institutional arrangement

Facility based Maternal Death Review process has been in practice in Nepal since the early 1990s. It is defined as an in-depth investigation of the causes of and circumstances surrounding maternal deaths occurring at health facilities with the objective of identifying avoidable factors and utilizing the information for improving quality of care at the facility, policy and programme reform. These reviews help facility, district, regional and national-level health officials develop safe motherhood strategies and influence the clinical and public health practices. MDR is an essential component of MPDSR. This kind of review analyses the underlying causes behind the death, with analysis of access, utilization and quality of care. The three-delay analysis and quality of care review is also done.

Figure 4.2: Phases of delay and factors affecting service utilization

The personal information obtained by MPDR has to be kept confidential, and will be grouped and non-identifiable. The information is recorded in MPDR forms and should be completed by the attending medical personnel within 24 hours of a maternal death. The form will further be reviewed by hospital MPDR committee within 72 hours of maternal death, and once a month in case of perinatal death. The completed forms should be made accessible to Family Health Division through web service within two weeks of maternal death and within one month of perinatal death review meeting.
In the case of maternal death, attending team should fill up to section 7 of the maternal death review (MDR) form within 24 hours of the death. The key informant accompanying the deceased can provide the information. Much information is obtained during admission. Maternal death review has to be done by the MPDR committee within 72 hrs of maternal death and fill the section 8 of MDR form. The hospital has to implement the recommendations that are within the capacity of the hospital immediately. Other actions requiring additional support are sent to DPHO as soon as possible. The completed MDR form has to be entered by hospital into the software provided.

In the case of perinatal death, attending team should fill up to section 4 of the perinatal death review (PDR) form within 72 hours of the death. Mother or key informant accompanying the deceased can provide the information. Perinatal death review has to be done by the MPDR committee once a month and write recommendation in section 5 of the PDR form. A summary sheet of all the perinatal deaths is prepared once in a month. The hospital has to implement the recommendations that are within the capacity of the hospital immediately. Other actions requiring additional support are sent to DPHO as soon as possible. The PDR form has to be entered by hospital into the software provided.

4.2.1 Community level (MDSR)

1. Community

I. Notification

Notifiers: FCHV, family members, teachers, female ward members and religious leaders.

Notification methods:
Calling or messaging to the public health facility looking after the community and district MPDSR focal person
Using written notification forms / verbal notification through messengers
Email/ fax/ web

II. Responsibilities of notification team/ members
a. Notify the local health authority about the within 24 hours of occurrence of death or knowledge of occurrence of death.
b. Create awareness amongst community members about notifying in case of any maternal deaths in their family/ area.

III. Process
In case of occurrence of death of any woman aged 12-55 years, the notifiers mentioned above have to notify the local health facility within 24 hours of its occurrence. The local facility will then filter the cases to see if they are suspected maternal deaths. After confirming whether the suspected maternal deaths occurred in the hospital, birthing centre, home or transit, the information has to be sent to the D/PHO quoting the place of death. A VA team comprising of at least two members from D/PHO will have to accompany the local HF member (preferably ANM) to interview the person who was close to the deceased or was present with the deceased
at the time of death. The team has to conduct VA within 21 days of death. They have to fill two copies of the form; one copy will be given to the local facility, while the other copy will be sent to the district. The facility MDSR committee has to review the form and take immediate action if applicable to prevent similar deaths in future.

2. Local health facility in the community

All the PHCCs, HPs and SHPs are considered as local health facilities and primary agencies to prevent maternal deaths in the community, and supporting agencies for reducing maternal deaths and perinatal deaths in the hospitals. MDSR committee is formed in the local facility to manage the process.

I. MDSR committee
a) Chairman of HFOMC - Chairman
b) ANM of same institution - Member
c) FCHV Representative - Member*
d) Teacher Representative - Member*
e) Community Based Organization representative - Member*
f) Health facility in charge – Member secretary

* To be selected by the chairperson

II. Responsibilities of MDSR committee
a) Ensure that maternal deaths are notified and reviews are conducted.
b) Conduct maternal death review and facilitate the verbal autopsy.
c) Incorporate the deaths in HMIS report.
d) Synthesize the findings and provide feedback to the health facility teams and district MPDSR committees.
e) Recommend actions based on maternal death review.
f) Mobilize resources to implement recommended actions.
g) Follow up to ensure that recommended actions are being implemented and followed.
h) Disseminate the review findings and recommendations to D/PHO.
i) Create community awareness about the causes of death and preventive measures.

III. Process
When death occurs in local facilities, the MDSR committee has to conduct the review and notify the district focal person within 24 hours. The district VA team along with the local facility doctor/staff nurse/ANM will have to conduct the VA within 21 days of death. In case of community deaths, the district has to be notified and local facility has to support the VA team. The facility level MDSR committee meeting has to be called within 72 hours after receiving the completed VA forms. The committee analyzes the VA form, finds factors that could have led to death and recommends local actions. The local facility has to review the forms, analyze and take immediate actions and prepare recommendations for district and above to reduce similar deaths. The MDR and VA forms will then be sent to the district for compilation, analysis, and formulation of recommendations.
4.2.2 MPDR in the Hospitals

This includes all levels of public and community hospitals, medical college hospitals, private hospitals, NGOs, missionary hospitals and nursing homes. MPDR is done in the hospitals for clinical audit of death which will further be audited with in-depth investigation (verbal autopsy). Thus all the hospital deaths are audited twice with different purposes.

I. MPDR committees

Different kinds of MPDR committees will have to be formed according to posts and personnel available in the hospitals.

Ia. The MPDR Committee for central, regional, sub-regional, zonal, private, NGOs, missionary run hospitals, community and specialized hospitals where different departments for Obstetrics/Gynaecology and Paediatrics are in place, is formed as follows:

a. Chief of Health Facility – Chairperson
b. Heads of Department of Obstetrics/Gynaecology – Vice Chairperson
c. Heads of Department of Paediatrics – Vice Chairperson
d. Nursing service chief / Matron- Member
e. Chief of Medical record section – Member Secretary
f. Invitee Members*

*To be selected by Chairperson

Ib. The MPDR Committee for the hospitals where different departments for Obstetrics/Gynaecology and Paediatrics are not available, is formed as follows:

a) Chief of Health Facility – Chairperson
b) Obstetrics/Gynaecologist or concerned personnel – Member
c) Paediatrician or concerned person – Member
d) Nursing service chief / Matron- Member
e) Chief of Medical record section – Member Secretary
f) Invitee Members*

*To be selected by Chairperson

In the PHCCs and other BEONCs, the MDSR committee will conduct MPDR with support from D/PHO. The DPHO should send medical doctor with sufficient knowledge on MPDR as and when requested by health facilities received.

II. Responsibilities of MPDR committee

- Conduct reviews of maternal and perinatal deaths occurring in the hospital.
- Ensure that maternal deaths are notified and reviews are conducted properly and adequately
- Ensure data management.
- Synthesize the findings and provide feedback to the hospital team
- Recommend actions to district MPDSR committees based on MPDR findings.
- Mobilize resources to implement recommended actions.
- Follow up to ensure that recommended actions are being implemented.
- Disseminate the review findings and recommendations to district, region and centre.
- Co-ordinate with stakeholders for quality of care improvement
III. Process
When a maternal death occurs, the attending medical personnel should fill the MDR form within 24 hours of maternal death and notify the D/PHO of residence of the deceased. When a perinatal death occurs PDR form is to be filled within 72 hours of death. The MPDR committee at the hospital has to meet within 72 hours of maternal deaths, and once a month for perinatal deaths. Records of all WRA who die should be observed for evidence of pregnancy. The hospital team has to conduct MPDR, complete the form with recommendations, and then enter data in the software. Verbal autopsy of the death has to be conducted by the district VA team within 21 days of death. The hospital has to analyze the data obtained and take immediate action. The data then goes to the district for aggregate analysis.
During MPDR meetings, the team should review the implementation status of recommendations made in previous sessions and prepare a report and send it to the D/PHO. The report should indicate the total number of deaths, the number of deaths reviewed, review findings, recommended actions and results of the previous actions.

Figure 4.3: Maternal death review and response workflow
4.2.3 District level (MPDSR)

I. MPDSR committee
   a) Chief of D(P)HO - Chairperson
   b) Statistician – Member
   c) Gynaecologist/Obstetrician from public or private hospital : Member *
   d) Doctor for assigning cause of death – Member*
   e) Public Health Nurse (PHN) –Member Secretary
   f) RHCC members - Member*
   g) Invitee members from line agencies - Member*
   * To be selected by the chairperson

II. Responsibilities of MPDSR committee
   a) Conduct MPDR in health facilities below district and Verbal Autopsy.
   b) Conduct capacity building activities
   c) Ensure that verbal autopsy is conducted after death is notified.
   d) Maintain confidentiality of the identifiers of the deceased identification and service providers.
   e) Data management.
   f) MPDSR review, dissemination of verbal autopsy review and recommendation at district review meeting and RHCC meeting.
g) Formulate recommendations, prepare and implement action plans and communicate to the concerned authorities.

h) Planning, monitoring and allocation of resources for MPDSR.

i) Feedback to health facilities for service provision and improvement of services.

j) Co-ordination with stakeholders.

k) Support hospitals for MPDR, collect recommendations and take action for response.

l) Make advocacy for reducing maternal and perinatal deaths.

III. VA team members
Team should comprise of 8-10 members; including D(P)HO chief, staffs from PHCC, public and private hospitals and SBA/ANM from community HF where death occurred.

IV. Responsibilities of VA team
a) Visit the site of notified death for VA within 21 days of death.

b) Use the national verbal autopsy form and send it to D(P)HO for data management, review and analysis.

V. District level MPDSR Process
District is the second level of death review forum. D/PHO is responsible for selecting the members of VA team. The team should comprise of 8-10 members headed by the D(P)HO. The members should include a doctor from PHCC, gynaecologists and pediatricians from public and private hospitals. At least two members of VA team have to conduct VA within 21 days of death. District has to designate a statistician or a statistical assistant to enter VA data from the community into the software. The MDSR and VA data from community and the MPDR data from hospitals have to be reviewed. The aggregate VA and MPDR data from community and as well as hospitals have to be analyzed, recommendations formulated and report disseminated to the local facilities, hospitals and stakeholders for action.

4.2.4 Regional level (MPDSR)

I. Regional MPDSR committee
a) Regional Director- Chairperson

b) Statistician, Regional Directorate – Member Secretary

c) Senior community nursing administrator – Member

d) Chiefs of Regional/sub regional hospital – Member

e) Invitee members *

* To be selected by the Regional Director

II. Responsibilities of Regional MPDSR committee
a) Standardizing the review process across districts and facilities by:
   
   • Ensuring the implementation of MPDR process at various levels of health facilities.
   
   • Conducting trainings for district team members on national VA form and on MPDSR.
   
   • Monitoring the district MPDSR committees
   
   • Analyzing the web based data and reviewing the recommendations made by facility based MPDR committees through D/PHOs.
   
   • Monitoring the progress on MPDSR.
- Coordinating with D(P)HO in the region for review of verbal autopsy process and recommendations made
- Providing periodic feedback to the districts and hospitals.
- Coordinating the allocation of resources and making necessary improvements in the health care delivery system of the institutes.

b) Facilitating and co-ordinating implementation of the recommendations made at facility level to reduce maternal deaths.

c) Forwarding recommendations to the concerned authorities for policy revision and support.

d) Incorporating the findings of MPDSR at regional level reviews.

III. Process
Regional MPDSR committee receives the recommendations to reduce maternal and perinatal deaths through district MPDSR committees. Regional team prepares descriptive analytical report by extracting data from maternal and perinatal database. It compares data with respect to the recommendations sent from districts and takes necessary action. Following a review of the report, regional team formulates recommendations and sends them to central MPDSR committee, describing the actions taken by region and actions that are to be taken by central level. The information on action taken is sent back to the district team. The regional MPDSR committee should meet at least once every three months.

4.2.5 National level (MPDSR)

I. MPDSR committee

a) Director General, Department of Health Services- Chairperson
b) Director, Family Health Division- Vice Chairperson
c) Director, Child Health – Member
d) Director, Management Division – Member
e) Safe motherhood Focal person – Member
f) Family Planning Focal Person – Member
g) Representative of Association of Private Health Institutions Nepal (APHIN)
h) Representative from one medical college, - Member
i) Senior Gynecologist/Obstetrician from Paropakar Maternity Hospital : Member
j) Invitee member*
k) Demography and RH Research Focal Person – Member Secretary

* To be decided by the chairperson.

There should not be more than 11 committee members.

MPDSR Secretariat will be based in the Demographic Section of Family Health Division, and will be responsible for conducting all the activities related to review of maternal and perinatal deaths in the country.

II. Responsibilities of MPDSR committee

a) Conducting activities related to review of maternal and perinatal deaths in the country.
b) Annual meeting on the status of MPDSR and analysis of the recommendations made during the review process in districts and implementation of these recommendations.
c) Policy guidance in response to recommendations made by the review.
d) Report to the RH steering committee.

The meeting of this committee should be conducted bi-annually (or at least annually) before the national review meeting.

III. Technical working group members

The Technical Working Group should be formed under the leadership of the FHD Director. The focal persons should be working in the field of reproductive health and attached to organizations such as Safe Motherhood Program, IMCI, HMIS, Population Division, Safe Motherhood program partners and technical experts from the fields of Obstetrics/ Gynaecology, Pediatrics and statistics.

IV. Responsibilities of the Technical Working Group

a) Capacity Building of health facilities for MPDSR process including training/orientation at different levels.

b) Monitoring, supervision and follow-up of the MPDSR implementation by:
   - Reviewing MPDSR reports.
   - Reviewing of the forms filled in the facility during monitoring and supervision field visit.

d) Disseminating the MPDSR outcomes and progress by:
   - Identifying the hospitals/ facilities/ geographical areas where maternal and perinatal deaths are occurring. Analysing the reviewed recommendations.
   - Providing feedback to the health facilities, RHD, D(P)HO based on the findings.
   - Facilitating annual review among MPDSR implementing facilities by conducting National Review workshop in order to share experiences and lessons learned.
   - Preparing annual MPDSR report to be endorsed by National MPDSR committee

e) Incorporating maternal and perinatal health issues in the basic training of health professionals and providing support with technical matters

f) Providing support in capacity building and implementation of MPDSR.

g) Development and incorporation of MPDSR information report in the annual report of DoHS.

V. Process

The Regional team has to send the analytical report of MPDSR outcomes along with recommended actions to the national level. The National level team has to review the report, take appropriate action and provide feedback and information on actions taken to regions. The technical working group should discuss on the agenda and submit it to the MPDSR National Committee for necessary proceedings.
4.3. Data aggregation, analysis, and interpretation

Data analysis and interpretation are critical of any surveillance system that guides and orients public health measures for prevention of deaths and health promotion.

Aggregation means summing up the similar variables after collection and collation of complete sets of information for the same reference period. Analysis is done to generate meaningful information after quality of data is ascertained. It is done against relevant corresponding denominators to bring out the required information with a set standard of definitions and processes. Interpretation is done to explain the output indicators with valid conclusions.

Team members involved in analysis should be trained to increase their skill levels and should have some epidemiological analysis skills. Ideally, initial analysis should be done at the level closest to the community, which is the district level in our setting, though analysis can be done at the local facility level to some extent.

The data aggregation, analysis and interpretation should be done at respective levels based on their needs, capacity and authority for review and response. Existing information systems would be used as much as possible to prevent duplication, make the data reliable and prevent inconsistency and redundancy. It is done at different levels as follows;

I. Local facility
Simple analysis can be done at the local facility level for:
   a) Subjective analysis of the verbal autopsy report.
   b) Analysis of the circumstances of death and probable cause of death with respect to local context
   c) Case load and fatality rate
   d) Population analysis with vulnerability aspect
   e) Service utilization and progress in maternal and child health
   f) Overall analysis for drawing the recommendations for action/response at local level and further forwarding

II. Hospitals
After completing the MPDR and VA forms, each hospital should enter data into the software prepared by the FHD. Hospitals analyze perinatal deaths but they only review maternal deaths without analyzing. The hospital staff can also use the data entered into the software to generate their own report. Following report generation, each hospital can identify actions to improve the flaws/ shortcomings evident from the analysis. Hospital staff should be given an opportunity to comment on result findings, and to offer suggestions on how future case reviews could be enhanced.

All facilities should know their facility- specific number of maternal deaths, and should be able to calculate indicators and report on the causes of deaths that occur there.

Hospitals can analyze data on maternal and perinatal deaths (on monthly/ four-monthly/ yearly basis) and yield the following results for further dissemination in the forum of stakeholders:
• Generation of descriptive tables, charts, graphs for perinatal death (monthly)
• Generation of descriptive tables, charts, graphs for maternal and perinatal deaths (monthly, four monthly and yearly)
• Setting numerators and denominators for indicators
• Brief elaboration and interpretation of indicators with trend and pattern
• Submission of report to MPDR committee at the hospital

III. Districts
The VA data from the community will be entered in the software at the district. District team also draws the required dataset entered by hospitals from the software, and checks the consistency with HMIS report. Analysis of maternal and perinatal deaths is performed along with:

• Receiving VA Report along with HMIS Report
• Receiving the Birthing Center MDR data
• Assigning codes to the causes of death
• Entering the data
• Receiving hospital MPDR data (web based)
• Generation of tables, charts and graphs
• Computation of defined standard indicators
• Preparation of trend (temporal analysis) and pattern (geographic analysis) for indicators
• Conducting monthly meetings of district MPDSR Committee and presenting the facts
• Interpretation of the information with set standard definition

IV. Region
At the regional level, the data on maternal and perinatal deaths is obtained from the software and analyzed by comparing districts and their geography along with;

• Receiving hospital MPDR data (web based)
• Generation of tables, charts and graphs
• Computation of defined standard indicators
• Preparation of trend (temporal analysis) and pattern (geographic analysis) for indicators
• Conducting monthly meeting of district MPDSR Committee and present the facts
• Interpretation of the information with set standard definition

V. Centre
The central level MPDSR committee obtains complete information on MPDR in hospitals and verbal autopsy from districts from the software. It checks for data consistency by comparing with the HMIS report. Central level Technical Working Group formed under MPDSR Central Committee will act as data analysis and interpretation group. Besides regular analysis for review and response purposes, it will also analyze the data to know;

a) Progress against national and international commitment and targets
b) Trend and pattern analysis
c) Vulnerable population and GESI analysis
d) Comparison against program specific process indicators
e) Comparison against multi-sector efforts

The central level TWG will make necessary arrangements for explaining standards and procedures for analysis and interpretation at each level. It will also capacitate different level teams with contemporary technologies and updates in the system.

4.4. Maternal and Perinatal Death Response

Counting and responding to every maternal and perinatal death is the main aim of MPDSR, because every death can provide information that can result in actions to prevent future maternal and perinatal deaths. There are three types of delays, resulting from interaction of various factors that determine the type of response at each level.

Recommendations made by the different levels MPDSR committees should be carried out at each level of health care provision. This will ultimately lead to actions, which in turn will be responsible for improvement in patient care as well as improvement in health care at the community. The response at different level may diverse due to authority, resources, capacity of the committees, socio-economic conditions of the community and population coverage. The response is delivered through MPDSR, MPDR and MDSR committees at facilities, DPHOs, RHDs and central level.

I. Community

Facility level MDSR committee comprising of Health Facility Operation and Management Committee (HFOMC) should meet as and when maternal death occurs. With the observation based on MPDR, verbal autopsy and general subjective review of each death, three delays have to be analyzed to determine the cause of death. Health facilities focus on first and second delay at the community level, while incase of birthing centres focus has to be directed at the third delay.

Immediate response:

- Sharing the issues on maternal death in appropriate forums especially at mother’s group meetings.
- Quality assurance of ANC/ Natal/ Postnatal care including lab investigations.
- Utilization of funds (for example FCHV fund, EOC fund, Referral fund and other fund if available) for emergencies.
- Strengthening the referral system.
- Community awareness on risk factors
- Deciding the health facility opening hours and duty adjustments
- Ensuring sufficiency of essential drug and other logistics
- Infection prevention and compliance to other service standards

Periodic response:
- Review and sharing of findings/ results in FCHV bi-monthly review meeting and raising awareness.
- Sharing of information and discussion during Ilaka meetings and preparation of appropriate action plan.
- Implementation of the feedback provided by higher authorities.
- Strengthening health promotion activities like training, street drama, local cultural programs in local language.

**Annual response:**

- Sharing the findings and discussion with Nagarik Wada Manch, VDC members and those who can make a difference.
- Advocacy and annual planning in VDC council to prevent maternal deaths.

**II. Hospitals**

The MPDR committee has to meet within 72 hours of every maternal death and once a month for perinatal deaths.

**Immediate response:**

- Sharing the issues on maternal death and perinatal deaths in MPDR committee and hospital staff meetings.
- Quality assurance of health care
- Utilization of funds available in the hospitals or creation of funds for emergencies.
- Increased preparedness for in-referrals and timely out-referrals with life saving arrangements
- Staff awareness on risk factors
- Health facility opening hours and duty adjustments
- Ensuring sufficiency of essential drug and other logistics
- Infection prevention and compliance to other service standards
- Other specific arrangements and quality of care improvement

**Periodic response:**

- Review and sharing of findings/ results in periodic meetings.
- Sharing of information and discussion during stakeholder/partners meetings
- Implementation of the feedback provided by DPHO and other government agencies.
- Incorporating maternal and perinatal death prevention and curative actions into work plan
- Other specific actions

**Annual response:**

- Sharing the findings and discussion with GoN and partners during meetings.
- Advocacy to prevent maternal deaths.
- Presentation of data, issues and action taken/to be taken in health review meetings
- Other innovations
III. Districts
Districts respond to maternal as well as perinatal deaths with all the program components and system mechanism as follows.

Immediate response:
- Implement recommendations and feedback made by MPDSR committees
- Organization and sharing of information in MPDSR and RHCC meetings
- Preparation of strategy to prevent the three delays
- Coordination with stakeholders for technical and financial/logistic support
- Provision of feedback to respective MDSR committees below districts
- Support hospital MPDR committees and prompt budget disbursement
- Provision of flexible fund in DHO/DPHO
- Improved information management including HMIS
- Other district specific innovations

Periodic response:
- Sharing the information in different forums like RHCC meeting, review meeting etc.
- Monitoring and supervision of Health Facilities/ Birthing Centres
- Sharing of information and discussion at Ilaka meetings and making appropriate plans
- Implementation of feedback provided by higher authorities
- Incorporating maternal and perinatal death prevention action plan in periodic plans
- Strengthening health promotion activities like training, street drama, local cultural programs based on local language

Annual response:
- Sharing the information/ issues at district and regional review meetings
- Need-based program planning with DDC and other stakeholders
- Other district specific innovations

IV. Region
The regional MPDSR committee reviews and responds to maternal and perinatal death prevention activities. The response could be as follows:

• Implement recommendations and feedbacks made by MPDSR committees
• MPDSR focused monitoring and supervision
• Respond, provide feedback/guidance on district reporting
• Sharing the issues in regional forums and national reviews
• Coordination between districts and centres for programs to reduce maternal deaths
• Providing technical support to hospitals and D/PHOs
• Incorporating maternal and perinatal death prevention action plan in periodic plans
V. Central level

The national MPDSR committee reviews and responds to maternal and perinatal death prevention exercise made by health institutions. The response could be as follows:

- Implementation of recommendations made by MPDSR committees
- Review on Policy and program alignment in view of equity and access
- Advocacy, acquisition and continuity of resources (Human resources, finance, logistic, institutional development etc.)
- National review and response with focus on appropriate innovations and technologies
- Coordination with relevant ministries and stakeholders
- Incorporating maternal and perinatal death prevention plan in plan documents
- Make arrangements to comply with national and global commitments
- Make regular contacts with authorities directly or indirectly involved in maternal and child health improvement
- Research activities in the subject area and co-ordination with agencies

At each meeting, the recommendations made during the previous meeting should be reviewed to see if the recommended actions have been implemented. The summary generated after reviews have to will be analyzed at each level for appropriate actions.

4.5. Dissemination of results, recommendations, and response mechanism

The result obtained after reviews have to be disseminated to all the concerned levels of health care at regular intervals. Results along with recommendations have to reach the grass root level from where data was obtained, as well as to stakeholders.

Figure 4.5.1: The dissemination mechanism
There are numerous methods of dissemination. The method selected has to be targeted towards the audience. The information has to be in the language that can be comprehended by target group and should be feasible to be applied in that target area. The most commonly utilized methods of dissemination are:

- Annual Report
- Web-site
- Presentation
- Documentary (Audio Video)
- Print/Electronic Media
- Workshop
- Journals and other publications
4.6. Monitoring, evaluation and supervision of the MPDSR system

Monitoring, evaluation (M&E) & supervision of the MPDSR system is necessary to ensure that the major steps in the system are functioning adequately and improving with time. It is also essential to assess the timeliness of the information and coverage of the system. Monitoring of the MPDSR system is carried out primarily at the national level. However, some of the indicators are also pertinent to the district level and permit assessment of the improvement, if any, in the system. A monitoring framework with indicators should be agreed on and indicators assessed annually.

Monitoring and evaluation of MPDSR system for better impact

In addition to the monitoring indicators that provide a snapshot of whether the system is improving, a more detailed periodic evaluation will be required particularly if

1) The indicators demonstrate that one or more of the steps in the MPDSR process is not reaching the expected targets, OR

2) If maternal and perinatal mortality is not decreasing. If there is no reduction in such mortalities, it indicates system failure, because the main purpose of MPDSR is to lead to action to reduce maternal and perinatal deaths. A more detailed evaluation can also be used to assess whether the system perform more efficiently. Ideally, there should also be a periodic evaluation of the quality of information provided.

Surveillance system to evaluate the MPDSR system includes acceptability, timeliness, data quality, and sustainability.

Efficiency
Examination of efficiency of the system includes an assessment of its key processes: identification and notification, review, analysis, reporting and response, and whether there are barriers to their operation that needs to be addressed. Computerization in notification and data management can make the system more efficient, but it requires trained manpower to operate. Ideally, the system should be computerized from at least central to district level.

Effectiveness
Evaluation of effectiveness determines if the correct recommendations for action have been pointed out and being implemented, if they are achieving the desired results and, if not, then what could the problems be. Method of carrying out this evaluation will depend on the circumstances in each community, facility, or health-care system. It starts with determination of if and how the specific MPDSR findings and recommendations have been implemented and whether they are having the expected impact on maternal and perinatal mortality.

MDSR Monitoring Indicators: Listed below are the indicators that can be used to monitor the MDSR system. The monitoring indicators are shown in annex.

Supervision
Intensive and extensive supporting supervision is to be done from centre, region and districts under their jurisdiction.

- Central level supervision should be conducted annually for districts & hospitals.
- Regional level supervision should be conducted bi-annually for districts, hospitals & health facilities.
- District level supervision should be conducted three times a year for health facilities & communities.
- Supervision should be supportive.
- Supervisor should submit the supervised check list to his/her respective in-charge & provide constructive feedback to the respective supervised districts/ hospitals/ health facilities.
- Supervision team will use a check list as given in annex
4.7. Confidentiality

All the information on maternal and perinatal deaths will be kept confidential. Every measure will be adopted to ensure confidentiality. Only the aggregated information without the identity of the deceased will be disseminated. In case of sharing individual data, datasets will be provided without individual identifiers. The notifiers, reviewers or those who attended the deceased before death will also maintain confidentiality regarding the details of the death. Individual data will be used only for MPDR and verbal autopsy.
5.0. References

1. WHO Factsheet 334 updated September 2013.
9. WHO. Beyond the numbers: reviewing maternal deaths and complications to make pregnancy safer 2004.
Case definitions according to 9th and 10th International Classification of Diseases (ICD-9 & 10) have been used to define various types of maternal and perinatal deaths.

- **Maternal Death (ICD-9):** The death of a woman while pregnant or within 42 days of the termination of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. Maternal deaths can be classified as Direct obstetric deaths and Indirect obstetric deaths.

- **Suspected Maternal Death:** The death of any woman while pregnant or within 42 days of the termination of pregnancy. In many cases, a pregnancy is not confirmed until second trimester or until it is physically evident. Any death where there is a suggestion of pregnancy should be notified as “suspected maternal death”. When setting up the system for notification of suspected maternal deaths, the time period of “42 days or 6 weeks” should be extended to 2-3 months.

- **Probable Maternal Death:** Deaths among women of reproductive age, not clearly due to incidental or accidental causes.

- **Pregnancy related Deaths (ICD-10):** Deaths occurring in women while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of the death.

- **Direct Maternal Death (ICD-9):** Deaths resulting from obstetric complications of the pregnant state (pregnancy, labor and puerperium), from interventions, incorrect treatment or from a chain of events resulted.

- **Indirect Maternal Death (ICD-9):** Deaths resulting from previous existing disease, or disease that developed during pregnancy and which was not due to direct obstetric cause but was aggravated by the physiologic effect of pregnancy.

- **Fortuitous or incidental (ICD-9):** Deaths from unrelated causes that happen to occur in pregnancy or the puerperium.

- **Primary cause:** Identify initiating condition or disease that led to the death of the woman. This is referred as "the primary (or underlying) obstetric cause. It should be noted that there could be only one primary obstetric cause.

- **Perinatal death (ICD-9):** Death of the fetus after 22 weeks of gestation or weighing 500 gms or more, upto 7 days following birth. Includes stillbirths and early neonatal deaths.
- **Stillbirth**: Death of the fetus before the onset of labor and before reaching the hospital or death during labor in hospital or death in hospital but patient not in labor.

- **Early neonatal deaths**: Deaths of the infant during the first seven days of life.

- **Stillbirth**: Death prior to complete expulsion or extraction from its mother of a fetus/baby of 22 weeks gestation or weighing at least 500 grams if the gestation is unknown. Death is indicated by the fact that after such separation the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles.

- **Live birth**: This is the complete expulsion or extraction from its mother of a fetus/baby of 22 weeks gestation or weighing at least 500 grams if the gestation is unknown; which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each fetus/baby of such a birth is considered live born.