Republic of Malawi
Ministry of Health

Maternal Death Surveillance and Response (MDSR)

Guidelines for Health Professionals

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Foreword

The Government of Malawi has over the years provided sexual and reproductive health services including the provision of emergency obstetric and neonatal care services (EmONC) to its people. This is with the aim of reducing the high maternal and neonatal morbidity and mortality rates for the country. However, the reduction in maternal mortality has remained slow, hence the need for systematic reviews of all maternal deaths to identify causes of avoidable deaths and institution of low cost, high impact interventions.

The loss of a mother has an immense impact on the wellbeing of the family members. The survival and development of her children, especially infants, may be adversely affected. Each mother's death diminishes the society at large.

To determine causes of all maternal deaths, government commenced maternal death reviews (MDR) in 2003 with review committees existing at 3 levels- National, regional and district. In addition, government made maternal deaths notifiable from 2009. To further strengthen the system and ensure complete accountability, government has chosen to move to a more robust system of Maternal Death Surveillance and Response (MDSR). This system builds on the principles of public health surveillance and is a form of continuous surveillance linking health information system and quality improvement processes from district to national level. It promotes routine identification and timely notification of maternal deaths and helps in quantification and determination of causes and avoidability of maternal deaths.

It is in this regard, that the Reproductive Health Department of the MOH has commissioned the production of this national MDSR guideline, which will guide capacity building and implementation of a functional MDSR system in the country that is incorporated within the present IDSR system. Government acknowledges that MDSR will be crucial to improve timely action and move closer to a future where preventable maternal deaths will be rare as we move toward actualizing the slogan that ‘No woman should die giving birth’

The ultimate aim of MDSR is to improve quality of care and thereby reduce avoidable maternal deaths in the country. The Ministry of health therefore urges all relevant stakeholders to make maximum use of this document to guide efforts aimed at improving the quality of maternal death notification, reporting, reviews as well as response and action systems.

Our sincere gratitude goes to all stakeholders and officials who have contributed towards the development of these guidelines.

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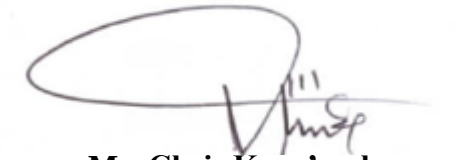

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Secretary for Health

List of acronyms

ART	Anti- Retroviral treatment
CBCA	Criterion-Based Clinical Audit
CHAM	Christian Health Association of Malawi
CHW	Community Health Worker
CR/VS	Civil Registration / Vital Statistics
DFID	Department for International Development
ESARO	East and Sothern Africa Regional Office
FANC	Focussed Ante Natal Care
GIS	Geographic Information System
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
ICD	International Classification of Diseases
IDSR	Integrated Disease Surveillance and Response
IPT	Intermittent presumptive treatment
IT	Information Technology
MaMAS	Maternal Mortality Auditing System
M&E	Monitoring and Evaluation
MDA 1	Maternal Death notification form
MDA 2	Maternal Death Audit form
MDG	Millennium Development Goal
MDHS	Malawi Demographic and Health Survey
MDR	Maternal Death Review
MDSR	Maternal Death Surveillance and Response
MMR	Maternal Mortality Ratio
MNH	Maternal and New-born Health
MOH	Ministry of Health
NCCEMD	National Committee on Confidential Enquiry into Maternal Deaths
NGO	Non- Governmental Organization
RHD	Reproductive Health Directorate
SM	Safe Motherhood
SSDI	Support for Service Delivery Integration
TBA	Traditional Birth Attendant
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Fund
USAID	United States Agency for International Development
VA	Verbal Autopsy
WHO	World Health Organization
WRA	Women of Reproductive Age

Operational Definitions

The International Classification of Diseases (ICD-9 and 10) defines a maternal death as:

a) **A maternal Death** is; "The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes

b) **Surveillance** is the ongoing systematic collection, analysis, and interpretation of health data. It includes the timely dissemination of the resulting information to those who need them for action. Surveillance is also essential for the planning, implementation, and evaluation of public health practice

c) **Maternal Death Surveillance and Response** (MDSR) is a type of surveillance and a component of the health information system that permits the identification, the notification, the quantification, and the determination of causes and avoidability of maternal deaths, for a defined time period and geographic location, with the goal of responding through actions that will prevent future deaths.

d) **Standards** are explicit statements of how a patient should be managed. They facilitate highlighting deficiencies by comparing the care that was given to patients with the care that ought to have been given (16).

e) A **suspected maternal death** is defined in these guidelines as the death of a woman while pregnant or within 42 days of the termination of pregnancy from any cause with the exception of motor vehicle crashes and homicides. Depending on the circumstances surrounding the death, identification of a death as a maternal death is sometimes challenging – particularly for indirect deaths. The maternal death review committee will review the circumstances and confirm whether it is maternal or not i.e. whether the death was "related to or aggravated by the pregnancy and its management".

f) **A facility-based Maternal Deaths Review (MDR)** is a "qualitative, in-depth investigation of the causes of, and circumstances surrounding, maternal deaths which occur in health care facilities". It is particularly concerned with tracing the path of the women who died, through the health care system and within the facility, to identify any avoidable or remediable factors that could be changed to improve maternal care in the future. This information could be supplemented by data from the community, though this may not always be possible.

g) **Confidential Inquiry Into Maternal Deaths**, the review is carried out by a group of appointed Independent assessors who will use the same audit guidelines to review selected maternal and perinatal deaths (even if these have already been reviewed by the Facility audit team.

1.0 Background

The death of a mother is a tragedy that has an immense impact on the wellbeing of her family and on the survival and development of her children, especially infants. Yet, nearly all of these deaths are preventable and should be eliminated, as called for by the Commission on the Status of Women. A vital component of any elimination strategy is a surveillance system that not only tracks the numbers of deaths, but provides information about the underlying factors contributing to them – and how they should be tackled. Maternal Death Surveillance and Response (MDSR) is a model of such systems.

An estimated 287,000 women worldwide died from pregnancy and its complications in 2010, 99%, of them in developing countries (*1, 2*). Reported maternal mortality underestimates the true magnitude by up to 30% worldwide and by 70% in some countries (*3, 4*). Inadequate measurement contributes to a lack of accountability and in turn to a lack of progress. By investigating a woman's death, MDSR inherently places value on her life – an important form of accountability for families and communities. An MDSR system can provide essential information needed to stimulate and guide actions to prevent future maternal deaths and improve how maternal mortality is measured (*5*).

Malawi has a total population of 13, 077,160 people of which 83% is rural. About 51% of the population is female and 44% of these are in their reproductive age (15-49 years); with a population growth of 2.8%. The youth (15-24 years) make up to 19% while adolescents (10-19 years) make up to 23% of the population. The Malawian population is young with 45% of the population below 15 years; and a life expectancy of 42.8 years among men and 45 years for women.

1.1 Maternal health care in Malawi

Maternal health care in Malawi is situated in a poorly resourced health system. Majority of women of reproductive health age live in the rural areas where access to quality maternal health services is poor. Women in Malawi have a high fertility rate of 5.7 children per woman, but the rural women and the less educated have a much higher rate.

Maternal mortality in Malawi is on the declining trend though still high. Efforts to reduce this unacceptably high maternal mortality led to several initiatives by the Ministry of Health and its partners including UNFPA, UNICEF, WHO, DFID, and USAID. The initiatives addressed safe motherhood, human resource strengthening through pre- and in-service training of health workers; and development and implementation of obstetric life-saving skills as well as adopting maternal death audit. In addition, they upgraded and equipped the health units; and provided communication (radio), bicycles and motorized ambulances. Despite these efforts, maternal mortality in Malawi has remained at 675/100,000 live births.

1.2 Context in which maternal health is provided in Malawi

Although the trend of maternal death is declining in Malawi, the MMR of 675/ 100,000 live birth is still too high and the country is unlikely to meet the targets for the MDGs 5. The country has a high institutional birth rate of 73% and a skilled birth attendant's rate of 71%, which contravenes the significance of institutional delivery in the light of the high maternal deaths.

Government through its ministry of health provides free health care services to 60% of the population. Christian Health Association of Malawi (CHAM) and other private not for profit organizations (NGOs) provide about 37% and there is a small contribution by the private for profit, police, army and local government [5].

Malawi's health care is provided at three levels: primary, secondary and tertiary levels. Health care resources are not evenly or equitably distributed. While the health system is reported to be under-resourced, 97% of clinical officers and 82% of nurses are in urban facilities leaving the rural areas with minimal access to skilled providers [6].

1.3 Maternal Death Review in Malawi

In Malawi, maternal death review (MDR) started in 2002 and a system was developed to carry out the audits at district hospitals .The maternal death audit forms used to audit (MDA 2) are collected, collated by the Zonal Office for the group of districts under the zone and then sent to the MOH (RHD) department. Since 2009 maternal death was made a notifiable event, and the government established a national committee on confidential enquiry into maternal deaths (NCCEMD). The national committee is tasked to:

- Develop appropriate tools for reporting of maternal deaths.
- Review all maternal deaths to identify avoidable factors and make recommendations for action
- Produce a report to the ministry of health every two years
- Play an advisory role to the ministry of health and RHU on the implementation of MDSR recommendations
- Provide oversight on how MDSR processes should be conducted

While reports on maternal death reviews were not available at the national level, there were zonal level reports and a trial run of 60 cases that were analyzed by the NCCEMD to see what comes out of the cases. The trial run review of 60 maternal death cases in Malawi showed that 93.4% of the death analyzed occurred in secondary and tertiary level health units, while 3.4% died in transit from a primary level health facility indicating that only a few occur in the communities. This was also evidenced from the pilot verbal autopsies which documented only 10% of the deaths in their areas of study occurring in the communities.

The report recommended the following:

- A need to audit within 7 days after the death
- The need to collect comprehensive data for monitoring,
- The need for the regulatory bodies to intensify monitoring of standards and professional conduct of health workers
- The need to ensure that essential obstetric drugs like Magnesium Sulphate and Naloxone are always available
- A need to share neonatal forms with safe motherhood committee

1.4 What is Maternal Death Surveillance and Response (MDSR)?

Maternal Death Surveillance and Response (MDSR) is a type of surveillance and a component of the health information system that permits the identification, the notification, the quantification, and the determination of causes and avoidability of maternal deaths, for a defined time period and geographic location, with the goal of responding through actions that will prevent future deaths.

Response—the action portion of surveillance. MDSR underlines the critical need to respond to every maternal death. Every death provides information that, if acted upon, can prevent future similar deaths. MDSR emphasizes the link between information and response. In addition, the notification of every maternal death permits the measurement of maternal mortality ratios and the monitoring of trends in real-time that provides evidence about the effectiveness of interventions

1.4.1 MDSR's two underlying rationales

i) MDSR provides information about avoidable factors that contribute to maternal death and guides actions that need to be taken at the community , within the health care system, and at the intersectional levels (i.e. in other governmental and social sectors) to prevent similar deaths in the future.

ii) MDSR establishes the framework for an accurate assessment of the magnitude of maternal mortality. By having an accurate assessment of maternal deaths, policy and decision makers may be more compelled to give the problem the attention it deserves. MDSR permits evaluators to more accurately assess the effectiveness of interventions geared towards the reduction of maternal mortality. MDSR has led to local policy changes and improvement of quality of maternal health services, even in challenging settings [4].

1.5 How does MDSR differ from Maternal Death Reviews (MDR)?

Facility-based maternal death reviews (MDR) are "qualitative, in-depth investigation of the causes of, and circumstances surrounding maternal deaths which occur in health care facilities." Community-based maternal death reviews (verbal autopsies) are "a method of finding out the medical causes of death and ascertaining the personal, family or community factors that may have contributed to the deaths in women who died outside of a medical facility"[7].

MDSR builds upon the work done to implement MDR. Though Malawi *may* already have in place provisions for notification of maternal deaths, these provisions are not always well defined and enforced.

i. MDSR stresses the concept of a maternal death as a notifiable event and that *all* countries should incorporate maternal deaths in their system of notifiable disease reporting and that concrete steps should be taken to ensure timely notification.

ii. MDSR also stresses the need to collect data on all maternal deaths that occurred in facilities as well as communities, and to view these deaths as providing a snapshot of weaknesses in the health care delivery system as a whole – from the community to the different levels of health care.

iii. It emphasizes the need to have clearly defined data sources and processes for identification and notification, regardless of the place of death. In countries where maternal death notification,

reporting and response are included in other surveillance systems (e.g. Integrated Disease Surveillance and Response [IDSR] systems),

iv. MDSR explicitly builds upon existing processes and guidelines and makes specific recommendation for action.

v. MDSR provides a greater emphasis on data analyses, data for response, and accountability for response including feedback to partners who are part of the MDSR system.

vi. It emphasizes more formalized reporting and strengthens linkages to national and district maternal mortality reduction plans.

vii. MDSR emphasizes a more robust response and gives maternal mortality greater visibility and importance.

viii. MDSR is strategically linked to the integrated surveillance system through the national IDSR system

1.5.1 Key MDSR cycle messages

- MDSR is a system geared toward preventing maternal deaths and improving quality of care through the dissemination and use of information for appropriate decision-making.
- Every maternal death is a tragedy. MDSR calls for notification and review; upon review, discussion, and communication of its results, while actions are taken to remedy the problems encountered.
- Understanding the underlying factors leading to the deaths is critical to preventing future mortality.
- MDSR emphasizes that data collection must be linked to action. A commitment to act upon findings is a key prerequisite for success.
- As a starting point, all maternal deaths in health facilities should be identified, notified, reported, reviewed, and responded to with measures to prevent future deaths.
- There is a need to improve the measurement of maternal mortality by working to identify *all* maternal deaths in a given area; without measuring MMR we will not know if our actions are truly effective in reducing maternal deaths

1.6 Goal of MDSR

The primary goal of MDSR is to obtain information to guide public health actions to reduce maternal mortality and monitor the impact of those actions.

MDSR provides information that can be used in the development of programs and interventions to reduce maternal morbidity and mortality, and improve access to and quality of care women receive during pregnancy, delivery, and the puerperium.

MDSR aims to provide information that lead to specific recommendations and actions, and contributes to the evaluation of the effectiveness of those actions.

The information provided by MDSR can increase awareness of maternal mortality at the community, health care system, and intersectional level with subsequent changes in practice among the public and health practitioners. It may also influence resource reallocation to activities that more effectively reduce maternal mortality. An enabling environment, of collaboration rather than blame, is needed to conduct MDSR and apply the findings toward action.

Ultimately MDSR aims to identify ***every maternal death*** in order to accurately monitor maternal mortality and the impact of interventions to reduce it.

Overall objective - To guide activities whose aim is to reduce maternal mortality by collecting, analyzing and interpreting data, reporting findings, making recommendations, taking action based on information, and monitoring the impact of the implemented actions.

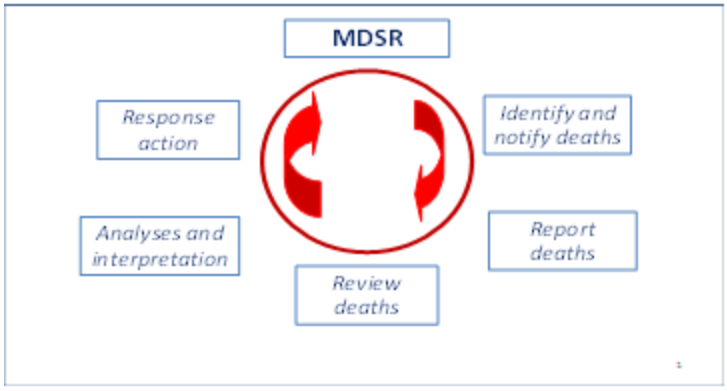
Specific objectives

1. To collect accurate data on all maternal deaths including the total number and causes of the deaths
2. To analyze data collected, observing trend, causes, avoidability and identify risk factors
3. To use the data to make evidence-based recommendations for action to decrease maternal mortality.
4. To establish and support a facilitative environment where the focus is on identification and prevention of maternal deaths within a collaborative process without blame
5. To disseminate the findings and recommendations to the community, health professionals and policy makers
6. To inform policy and programs on the high impact of interventions
7. To increase awareness among the community, health professionals and policy makers about the magnitude, social effects, and preventability of maternal mortality.
8. To compare maternal mortality statistics at District, regional, national, and international levels
9. To ensure appropriate actions take place by monitoring what happens to recommendations.
10. To improve maternal mortality statistics
11. To guide and prioritize further research

1.7 MDSR Methods

The MDSR process is designed to provide real-time action data on maternal mortality levels, causes and contributors and build capacity at all levels to take appropriate and effective actions. Although it builds upon the maternal death review approaches, MDSR aims at identification, reporting and review of all maternal deaths in communities and facilities to inform local health systems for the development of local data driven interventions, foster community-facility partnerships, mobilize political will, and promote utilization of high quality maternal health care services through increased awareness, community empowerment, and advocacy.

Figure 1.7.1: Maternal Death Surveillance and Response (MDSR) system: a continuous action cycle



MDSR cycle consists of five steps:

1. Identification and notification on an ongoing basis: Identification of deaths of women while pregnant or within 42 days of the termination of a pregnancy that occurred in facilities (maternity and other wards) and communities, and brief information about the suspected maternal death communicated within 24 hours if maternal death occurs at the facility and 48 hours if maternal death occurs in the community.
2. Reporting: additional information obtained (per IDSR in Africa) that provides more details about the death (e.g. date and place of death, brief summary of information from medical record or family);
3. Review of each suspected maternal death by locally established maternal death review committees to confirm if the death was a maternal death and to examine medical and contextual factors that led to maternal deaths and assess preventability;
4. De-identification, data management, analyses, and interpretation from review findings at the district level and reporting to national level;
5. Response and action to address the problems identified at the community, facility, and multi-sector levels through interventions to prevent the occurrence of similar deaths in the future.

The cycle closes by continuing to identify and review cases, with particular attention to monitoring the implementation of recommended actions and responses and revisions as needed.

2 IMPLEMENTATION OF MDSR

2.1 General steps and structures for MDSR Implementation

MDSR stresses the concept of a maternal death as a notifiable event and the country incoporates maternal deaths into the system of notifiable disease reporting. The system has concrete steps to ensure timely notification, review/audit, reporting on all maternal deaths and response as indicated in Table below.

Table 2.1.1: summary of the 8 Steps of a MDSR

Step	**Description**
1	Establish a national/zonal/district MDSR committee.
2	i. Map the health facilities eligible for MDSR with feasibility of reviewing maternal deaths ii. Sensitize / orient Committee members on roles and responsibilities and plan for MDSR
3	Implementation of maternal death reviews i. Train health workers and introduce MDSR in the health facilities- *determine the facility readiness* ii. Identify focal persons at different levels, and data collectors (district, facility level and community) iii. Identify sources of data iv. Collect data (within the health facility and in the community) v. Make standards of good practices for MDSR available

Step	**Description**
	vi. Report/notify the maternal deaths vii. Synthesize the data for each maternal death and determine corrective measures viii. Submit results/ audit reports to zones
4	Meetings for MDSR committee to discuss how to utilize the findings for action. (whenever a death occurs for the community & health facility, Monthly for district and quarterly for zonal and national) I. Re-evaluate recommendations of previous session II. Present the clinical case summary III. Review the case (MDSR): systematic case analysis, case analysis summary and recommendations and action plans for monitoring of implementation IV. Make MDSR session report V. Plan the next session
5	Implement recommended actions to improve maternal and newborn health
6	Conduct Confidential enquiries for maternal and perinatal deaths (NCCEMD with independent assessors and produce analytical reports to inform policy and programming.
7	Provide feedback to zones and districts ; and follow up on recommendations
8	Follow up and technical support supervision by NCCEMD

There are three levels at which these different steps are conducted:

A. National – the first two (1-2) and last steps (4-7)
B. Zonal the first two (1-2) and last steps (4-7)
C. District, health facility and community- all steps (1 -7) will apply

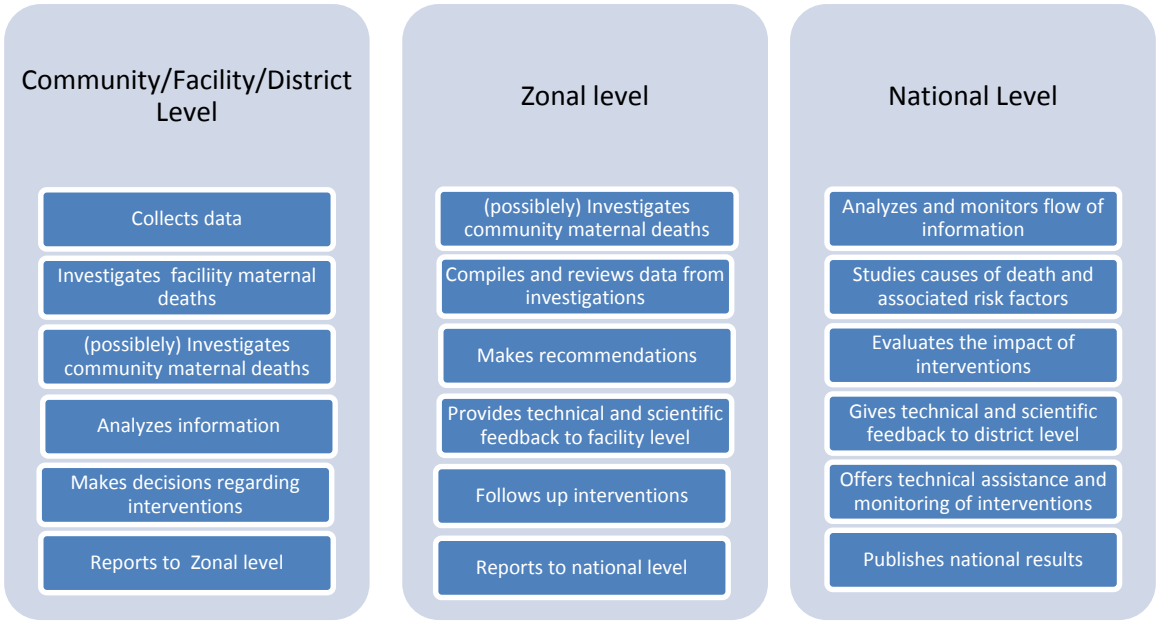
At each level, there should be MDSR committee responsible for tracing, reviewing, reporting and responding to maternal deaths as follow:

- At national level, NCCEMD which comprises MOH personnel, zonal officers, professional/regulatory bodies, traditional leader, and representatives of the international organizations.
- At zonal MDSR committee consists of 5 members drawn from district and zonal levels who include Zonal Supervisor, Zonal nurse/midwife, Zonal M&E officer, the DHO and DNO from the district where the death occurred. In the case where a death that occurred from a central hospital is being reviewed, the hospital administrator and CNO will replace the DHO and DNO respectively.
- Each district should have a multidisciplinary MDSR committee consisting of 10 members who include DHO, DMO, DNO, maternity ward in-charge, representative of the Health Advisory committee (HAC), laboratory and pharmacy, anaesthetic, Safe motherhood coordinator and representative of facility where the death occurred.
- The composition of the tertiary/Central Hospital (public and private) MDSR committee will be similar to the above with the Administration staff, HOD of maternity and Matron taking the equivalent position of DHO, DMO and DNO respectively and other members remain as in the district MDSR committee. However, the tertiary/central hospital MDSR committee should feed into district data base.

- Community MDSR committee has three members from district MDSR team, HSA, service provider from nearest facility, a member of ADC, member of VDC, village headman and two members of VHC from the area where death has occurred.

The functions of these committees are summarized in a figure 2.1.1 below.

Figure 2.1.1: Functions of maternal death review committees



2.2 Identification, notification and reporting maternal deaths

Case definitions

The 10th International Classification of Diseases (ICD-10) defines **maternal death** as "the death of a woman while pregnant or within 42 days of the termination of pregnancy irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes". Maternal deaths can be categorized into direct obstetric deaths and indirect obstetric deaths.

Maternal death - a notifiable event

Malawi made maternal death notifiable in 2009 which makes maternal death a national priority. The MDA 1 form is used to notify maternal deaths. . This form must be completed immediately after death by the last person who attended to the patient in the facility within 24 hours or within 48 hrs when death occurred within the community (by HSA or CHN). The original should be submitted to the zonal level with copies to the district and national levels.

The report framework for maternal deaths in the country includes, community, peripheral health facility, district hospital, zone and then to the MOH (RHD), where the M&E officer collates the forms

for analysis by the NCCEMD. The reporting process generally follow the same flow as other notifiable conditions. Immediately after notification, an audit should follow using MDA form 2 and a and more thorough report is submitted. Weekly maternal death summaries are also completed and circulated by the IDSR team in the Epidemiological unit of the MOH and these are circulated to all districts for feedback and also to national level partners.

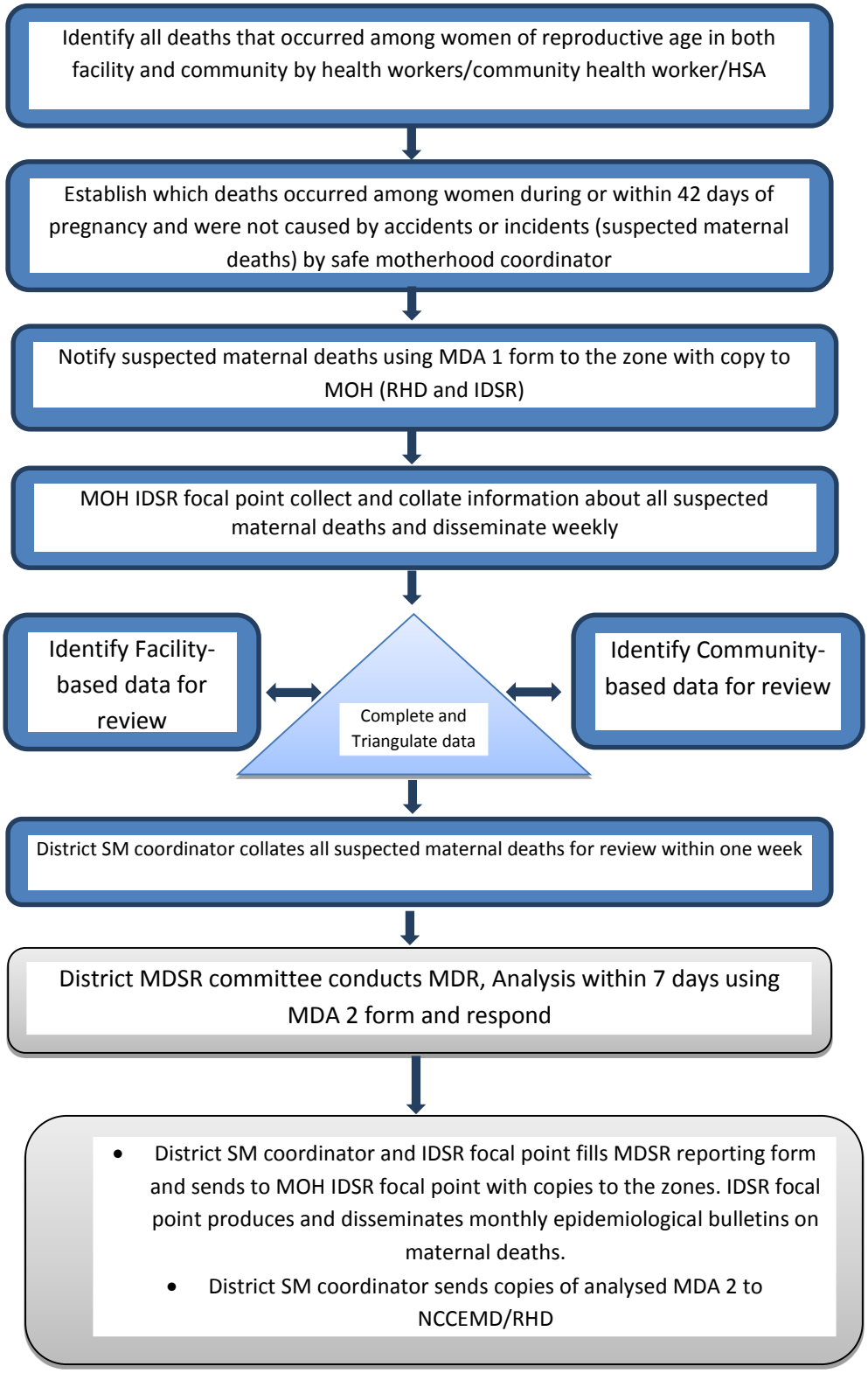
The concept of **"Zero reporting''** is strongly required. Zero reporting means that at the district level – there is an active process of notifying suspected maternal deaths, whether or not any occurred. If no maternal deaths occurred then a "zero" is captured in the data collection system rather than nothing at all. When the entry is left blank it's not clear that attention was paid to the entry. Zero reporting is used as an indicator that active monitoring for the condition is taking place.

Sources of information

There are two major sources of information that can provide timely reporting of maternal deaths: health facilities and communities.

Vital records are an important source for formal reporting of maternal mortality. Information from MDSR will feed into the formal vital statistics/civil registration process being undertaken by the National Registeration Bureau (NRB).

Figure 2.2.1: Identify, notify, review/audit and report on all maternal



Identification and notification of maternal deaths in health facilities

The district SM coordinator in collaboration with officers- in- charge of health facilities are responsible for checking data on deaths and other records on a daily basis and ensure that no maternal deaths are missed. This review of death records should include not only the obstetric ward but other areas where women may seek care or enter the facility (e.g. female ward, Gynecological wards and emergency/casualty department). Any death of a woman of reproductive age should trigger a review of her medical record to assess whether there is any evidence the woman might have been pregnant or within 42 days of the end of a pregnancy. To facilitate this process, health providers should ensure that comprehensive obstetric history including last menstral period is recorded for all women of reproductive age. The identified suspected maternal deaths should be recorded using the MDA 1 form for notification within 24 hours to the district maternal death surveillance and response committee, zone and MOH (RHD and IDSR). Notification should immediately trigger a more-in-depth review of the death. Government, Faith based health facilities such as CHAM, private and NGO health facilities should all feed into the same system.

Identification and notification of suspected maternal deaths in the community

Community health workers/leaders in collaboration with existing village committees are responsible for reporting all suspected maternal deaths from the community within 48 hours. Each community is expected to have a community maternal death and survelillance committee. This committee meets to assess the information on the death to ascertain if the death is a suspected maternal death. This is followed by the verbal autopsy process in the community within one month and this is shared with the nearest health facility.

Triangulation to avoid duplication

It is important to avoid duplicating notification of the same suspected maternal death. Triangulation of data between sources using personal identifiers can be helpful to ensuring each death is reported only once. For instance, a facility and community may both report the same death. The safe motherhood coordinator should ensure that there is no duplication. After triangulating information, the coordinator will notify the zonal and national levels .

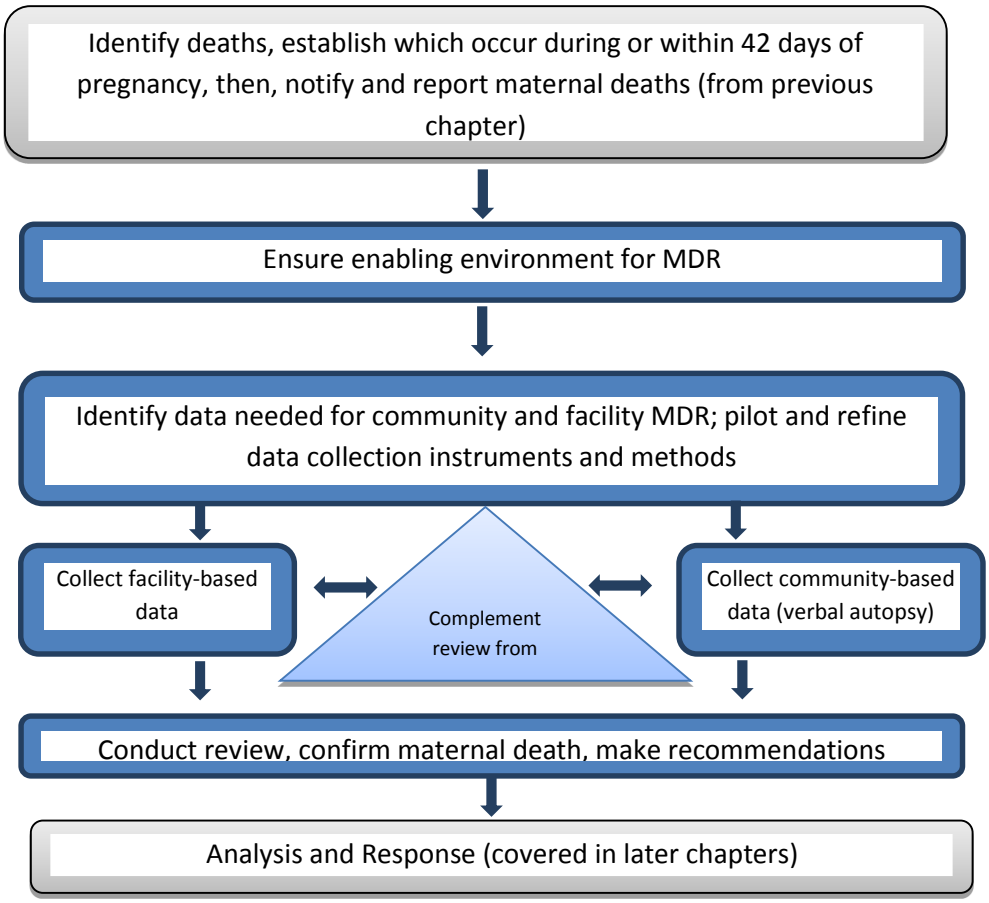
2.3 Maternal death reviews (MDR)

MDR is defined as "qualitative, in-depth investigation of the causes of, and circumstances surrounding maternal deaths. Medical causes and contributing factors are determined as part of MDR with a view to finding out why the deaths occur and what can be done to prevent them.

The primary purpose of maternal death review is action, and without the support of key stakeholders, recommendations cannot be turned into actions. These can include community- or facility-based interventions, guideline development and introduction, improving access to services or health system reform. Thus, the review process will need the support of local community leaders, facility Officers- in-charge, national level agencies and the government.

This section provides key elements needed for MDR in the context of MDSR (Refer to fig 2.3.1).

Figure 2.3.1: Key elements of Maternal Death Review



Several approaches can be used to study maternal deaths, cases of severe morbidity and clinical practice. These include community verbal autopsies, facility based maternal death review, criterion based audits, near miss audits and confidential enquiry into maternal deaths. The objective of all these approaches is to reduce maternal and neonatal mortality and morbidity by improving the quality of care provided.

These approaches can be used:
At community level, the "verbal autopsy"
At health care facility level, individual Maternal Death Review (MDR)
At zonal or national level, confidential enquiries into maternal deaths

The description of each approach is summarized in table below. In addition, institutions with advanced review systems and those with fewer maternal deaths can proceed to do individual case reviews of severe morbidity ("near miss"), and criterion-based clinical audit (CBCA) to improve the care they give to their mothers.

Table 2.3.1: Summary of these approaches

Name (level)	Definition	Advantages	Disadvantages
Verbal autopsy (Community)	A method to find medical causes of death and contributing factors in women who died outside of a medical facility	- Explore medical and non medical factors, thus more comprehensive - Include family and community	- Medical causes are not perfect - Factors are subjective - Causes not always in accord - Underreporting risk for early pregnancy deaths and misreporting when indirect causes
Maternal Death Review (Health Facility and district)	In-depth investigation of the causes and circumstances surrounding maternal death	- Obtain more complete picture about death - Not expensive - Good learning experiences - Stimulate the setting of standards	- Not as systematic as clinical audit - Difficult to trace community factors - Lack of whole population data
Individual Near Miss case review (Health Facility)	The identification and assessment of cases in which pregnant women survive obstetric complications	- More frequent cases allow quantification - Less threatening to health providers - Patient can be interviewed - Provides direct feedback	- Ignore community - Needs elaborated tools and clear definition - Case ascertainment may require long time
Criterion-based clinical audit (Health Facility)	A systematic review of care against established criteria aimed at improving the quality of care	- Less threatening to health providers - Provides direct feedback - Less subjective assessment - Highlight deficiencies, in in-patient records and record storage	- Ignore community - Will not provide a complete overview of all maternal deaths - Audit requires that an appropriate set of criteria be available/developed
Confidential enquiries into maternal deaths (Zonal and National)	Multi-disciplinary anonymous investigation of all or a sample of maternal deaths occurring at regional or national level. It identifies the numbers, causes and avoidable or remediable factors associated with them	- Make general recommendation - More complete picture of maternal mortality - Use for advocacy - The absolute number of maternal deaths is often not very large and enables in-depth investigation	- Numerous data only - Analysis of cases complex and time-consuming if high number of deaths - Can lack richness if concentrates only on medical aspects - A confidential enquiry requires commitment from all participants and may be resource-intensive

When conducting MDR, the following factors should be considered:

Facilitating factors

- A minimum of resources, equipment and staff to ensure a minimum quality of care in the hospital structure.
- The commitment and support of the administrative authority to assist the team and mobilize resources.

- The willingness and commitment of the maternity team who should feel concerned by improving the quality of care they provide, who should be ready to question themselves but also who should be involved in decisions.
- A supportive environment where constructive criticism is possible with a non-threatening environment.
- Support for hospital staff in audit methodology by assuring training that will enable them to acquire the knowledge and skill to conduct audits.

The obstacles

- The beliefs and suspicions, doubts, fear of criticism and lack of confidentiality accented by a threatening or repressive environment.
- Lack of didactic support.
- Lack of resources to support the audit.
- A poor quality of records and insufficient documentation.

The risks

- Discourage health personnel if the proposed changes do not occur.
- Encourage false reports if the audit is perceived as threatening.
- Damaging the relationship between staff (in particular if the basic audit session rules are not respected).

2.3.1 THE MDR PROCESS

This section provides guidance on how to conduct MDR in the health facilities and the community. This guideline will assist the national, zonal, district and health facility level committees to harmonise the on-going implementation of maternal death audit but also has a detail for MDSR. It is designed to assist health workers fill in the notification, reporting and audit forms and discuss the deaths with relevant personnel. This Guideline should be used while filling in the Maternal Death Audit Forms and during the death review process.

The review process described in this guideline is a mixture of two approaches of reviewing maternal deaths:

- **Facility based death reviews /audit *is a***n in-depth investigation of the causes and circumstances surrounding maternal deaths occurring in health facilities.

- **The <u>Verbal Autopsy</u>** uses information from individuals in the community who looked after the deceased at the time or near the time of death to build-up a picture of events, but also to complement the information obtained from reviews of deaths at health units. Interviews are held with community members and relatives who looked after the deceased at or/ and near the time of death to come out with a complete picture of the circumstances relating to the death of the mother. It usually brings out social cultural issues that might have contributed to these deaths. Actions to address these problems can reduce on the burden of mortality and morbidity.

When used in combination facility based death reviews and verbal autopsy reconstruct the whole story surrounding the woman's death. The above two processes can be done independently but both will feed in the national level efforts.

2.3.1.1 Steps in conducting facility based Maternal Death Reviews.

MDR focusses on what happened in a particular health facility where the maternal death has occurred. The results of this process benefits that facility but also the lessons learned therein could benefit facilities with similar situations when disseminated.

MDR/Audit is a process based on several principles which include the following:

- Search for improvement according to the results of audits
- Respect of evidence-based practice to decide for standards of good practices
- The process is not punitive = “no blame”
- Respect of confidentiality = “no name”
- Audits are not policing clinical staff

To make review/audit feasible, the following two elements are essential:

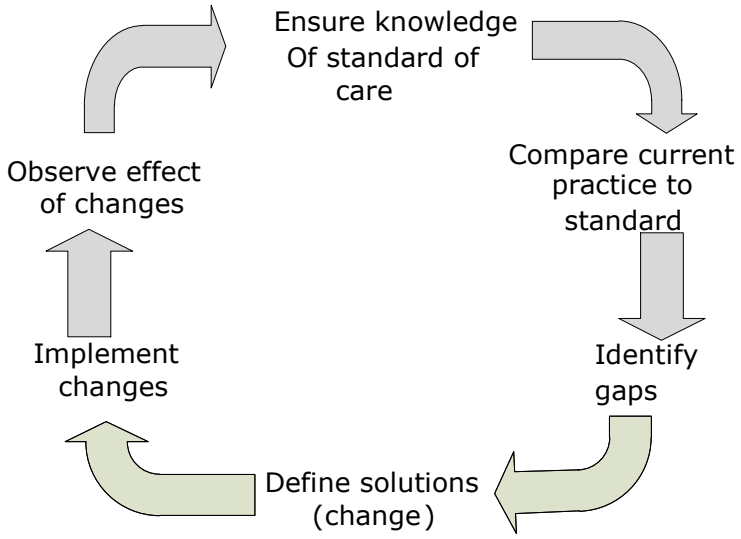
- The standards of good practices/care
- Records of clinical management. If records are not or poorly maintained it could be very difficult to audit; "if it is not recorded, it did not happen”.

Conducting a maternal death review involves the following steps:

- Prepare for a maternal review; set date and identify the venue, notify committee members and other personnel and other logistical issues.
- Identify best practices as defined in the existing nationally approved obstetric protocols as a standard of reference
- Identify cases to be reviewed and personnel who were in contact with the case.
- Start the meeting by reading MDSR TORs with emphasis on confidentiality.
- During the meeting, the cases are presented as they appear in the case notes
- Identify and discuss strengths and gaps (avoidable and unavoidable factors) in the patient management.
- Identify possible evidence based recommendations and prioritize them.
- Develop action plan with time lines (immediate and long term) and responsible personnel.
- Follow up of set action points by response coordinator (IDSR or Safe motherhood coordinators).
- The committee should fill up MDA 2 and MDSR reporting forms during the review and submit to zonal and national levels within seven days.

For institutions with advanced review systems, a criterion based audit is carried out as a cycle of a systematic process of establishing best practice, measuring care against standards of care or criteria, taking action to improve care, and monitoring to sustain improvement. The spiral suggests that as the process continues, each cycle aspires to a higher level of quality. The different stages are illustrated at the Figure 2.3.2 below.

Figure 2.3.2 Case by case audit steps



2.3.1.2 STEPS IN CONDUCTING VERBAL AUTOPSY

Identification and notification of suspected maternal deaths in the community

- Community health workers/leaders in collaboration with existing village committees and HSAs should report all suspected maternal deaths from the community within 48 hours.
- The community MDSR committee should meet to assess information on the death to ascertain if the death is a suspected maternal death.

Data Collection

- Community MDSR committee members should be fully aware from the outset of the extreme care and diplomacy needed in discussing maternal/ newborn deaths and still births in the community, especially with close relatives. The aim is to find out the respondent's personal opinion on the major factors contributing to the death which could have been avoided.
- Permissions or approvals from the community leader or village headman must be secured before any interviewing can take place. These authority figures may also be part of the community audit team, but also they will be critical for ensuring that the actions from audit will be addressed.
- Interviews should be conducted to those individuals who are most knowledgeable about the death and particularly the events before the woman arrived at the facility. For example, mother and husband. A comprehensive verbal autopsy form is applied to those deemed to be maternal death for both confirmation and establishing the cause of death. Any medical information that can be located (e.g. antenatal care book, health passport, records of hospitalization prior to her death) may complement information collected through verbal autopsies.
- Avoidable factors can be used here as a way to conclude the interview. Independent review of the VA data is done by facility MDSR Committee to establish the probable cause of death. This process follows a similar process like the facility MDR.

Barriers to verbal autopsy

The community MDSR committee members may encounter a number of barriers during the community interviews:

- Relatives, for example, may accept the death as 'God's will' and be reluctant to talk about it in any other terms, particularly if there is superstition about discussing death.
- There could be an unwillingness to talk about abortion-related deaths, especially if abortion is illegal or prohibited for religious reasons. Other conditions which may lead to resistance to audit could be if the deceased had HIV related illness.
- Some respondents may feel particularly responsible for the tragedy, such as the Traditional Birth Attendant who delayed referring the woman, or the husband who could not afford to pay for transport.

Quality assurance

The usefulness of the MDSR system is dependent on the quality of data gathered and analysed on each maternal death. This therefore requires that a system of quality assurance of the information on the tools used is put in place. It is also important that members of the MDSR committees at all levels are trained and conversant with the skills required to conduct quality MD reviews. To ensure this, Malawi will put in place a system of quality assessments of the reviews and have regular updates for the reviewers of maternal deaths.

Use of independent assessors

To further assure the quality of the maternal death review system and act as a control, independent assessors who are experienced professionals will be identified from the NCCEMD and the training institutions. Each team of assessors will consist of an experienced consultant obstetrician and an experienced midwife. The pair of assessors will be tasked with the reponsibility for conducting further independent reviews of a sample of analysed MDA 2 forms to ascertain the level of completeness, accuracy and compliance with the agreed review processess and provide feedback to the NCCEMD/MOH. They will provide an independent analysis of the cause of death and provide comments as may be neccesary on each case reviewed..

Legal protection of care providers.

The protection of the MDR system from litigation is important if it is to achieve its aim. The NCCEMD is advocating strongly for legal provision for protection of the information from the maternal death reviews process from the possibility of being accessed by the courts of law or lawyers for litigation purposes. In addition, mechanisms have been instituted to ensure the removal of identifiers for the women who died as well as health care providers who looked after the women to minimize possibility of both the woman who died and the health providers being identified if the information fell in the wrong hands.

2.4 Data Analysis

Data analysis and interpretation of results are critical components of any surveillance system that guide and orient appropriate public health measures for prevention and health promotion.
Analysis should be done by MDSR committees at all levels. These committees should have M& E officers who have appropriate epidemiological skills to be able to critically analyse and interpret the data.

2.4.1 Steps in Data analysis

Data analysis should start at a minimum at the district level. Facilities with large-volume deliveries should also be able to perform descriptive analyses of facility-based maternal deaths. Analysis will have different functions and corresponding responses when done at the facility level, compared to analysis done for the district or national levels. Through MDSR:

- All facilities should know their facility specific number of maternal deaths, including those that have happened in the community within their catchment area.
- Be able to calculate indicators in a facility and should be considered a sentinel health event that automatically triggers the question "why did it happen?" and,
- When recommendations are made they should include information on immediate responses, subgroups at highest risk, identifying contributing factors for maternal deaths, assessing the emerging data patterns, and prioritizing the most important health problems to assist the public health response.
- Follow up actions, timelines and focal persons to be identified

2.4.2 Data entry, quality and completeness

The framework for data transmission, aggregation, processing, and storage should start at district level with the filling of MDA 1 form after a suspected maternal death. The district (safe motherhood coordinator and IDSR focal persons) receives the Maternal Death Notification Form (MDA1) within 24 hrs for facility deaths or 48 hrs for community deaths. The safe motherhood coordinator assigns case registry numbers and retains files in secured storage and will assemble the review committee.

A visit to the facility or representatives from the facility (or to the family in cases of community death) will be scheduled within seven days and will include the processes of a maternal death review as previously described. Each review will produce MDA 2 (see appendix 2). MDA 2 forms in hard copy will be entered monthly in an electronic maternal death database- the Maternal Mortality Auditing System (MaMAS). Due diligence will be exercised in completing the MDA 2 and MDSR reporting forms to ensure that they are completely filled and contain all detailed information obtained from the facility registers, records and health care providers who had contact with the deceased.

MDA 2 forms based on verbal autopsies will be adapted to the content of the verbal autopsy forms. The completed MDA 2 forms will be sent to the zonal and national levels (RHD), while the MDSR reporting form is sent to the epidemiological/IDSR department.

At the district level, a Safe Motherhood Coordinator will check for completeness, individual item code validity and inconsistencies between data items and will enter MDA 2 form in the maternal death

database. The Safe Motherhood Coordinator and district HMIS officer will also clean the data by verifying coding and other data-base errors that may need corrections. The review team will be notified of any problems, if necessary, including inconsistencies or inadequate reporting of certain items. The maternal mortality review team will also be informed of differences encountered in the number of entries and asked to verify the counts or to determine the nature of the inconsistencies. The database will be utilized for analyses of all the maternal deaths that have been reviewed.

2.4.3 Data protection

Access to the database should be password-protected, allowing only appointed personnel to perform analyses and also have access to the data. Back up files will be retained in secured, locked up places. Data from the maternal death database and de-identified case summaries will be kept and used in the analysis, while the original notification and review forms will be destroyed after 5 years, and certificate of destruction be made available.

When performing MDSR analyses, the following factors are prerequisites:

1) Knowledge of surveillance (sources, mechanisms, data collection instruments, completeness of reporting, abstraction, data entry and validation).
2) Good understanding of the indicators to be calculated and denominator issues.
3) Changes over time in cases definition, detection, or data collection. Changes in case detection e.g. introduction of mandatory notification, active case detection, and improvements in awareness of reporting, can also influence the surveillance findings.
4) Modification of data collection instruments should also be accounted for when interpreting trend data.
5) Knowledge of the limitations of the data, such as incomplete coverage, poor quality, and changes over time in data processing may also influence the analysis.

Box 2.4.1 Descriptive analysis of maternal deaths

Details of the deceased: age, marital status, parity/gravidity, pregnancy outcome,
Educational level, date of admission, reason for admission, condition on admission
Place: Where family lived (urban or rural; district / sub-district).
Date of admission at institution where death occurred
Time: Date of death (day, month, year), time of day when death occurred,
ANC: Did she receive antenatal care; how many visits, and type and quality of care provided; any danger signs during ANC, actions taken on identified danger signs.
Delivery and peurperium: Date and time of birth, was partogram used, place of delivery, ownership of place, delivery attendant, mode of delivery (vaginal, forceps, caesarean, etc).
Data source: Notification only, facility-based review, verbal autopsy
Medical cause of death: (Direct and indirect causes; underlying and contributory causes cause of death in line with ICD 10 classification)
Contributing (associated) factors and preventability: health worker, administrative, patient/family, TBA/Community factors.
Neonatal information: Birth weight, Apgar score, outcome for new-born, cause of death.
Case summary: supply a short summary of the events surrounding the death including quality of care at all levels
District Maternal Death Review Committee Action Plan to Improve Future care
Details of person filling the form: Name, position, phone number, and signature.

2.4.4 Qualitative Data Analysis

Documentation of the frequency of medical and non-medical problems that have contributed to the maternal deaths is a priority in MDSR analysis (Box 2.4.2). Examination of these factors provides insights in the preventability of each death. Interviewing family members and health care personnel and reviewing medical records can provide a clear picture of the circumstances outside and inside the hospital which contributed to the death. Putting together the findings from different death reviews and interviews especially those related to circumstances surrounding the death. These are analysed quantitatively, and provide information about which problems are most common. Data quantitatively analysed may include; socioeconomic and cultural factors, health status of the woman, health care behaviours, access to and availability of adequate health services, quality of care, and availability of supplies**.**

Box 2.4.2: Contributing factors to maternal deaths

Health Worker factors	Administrative Factors	Patient/Family Factors	TBA/Community Factors
• Inadequate midwifery skills • Delay in deciding to refer • Initial assessment incomplete • Inadequate resuscitation • Wrong diagnosis • Wrong treatment • Unsafe medical treatment • Delay in starting treatment • Inadequate monitoring • Prolonged abnormal observations without action • Lack of obstetric life-saving skills	• Communication problem between health facilities • Transport problem between health facilities • Lack of qualified staff • Lack of antibiotics • Lack of other essential obstetric drugs • Lack of essential equipment • Lack of laboratory facilities • Lack of availability of blood transfusion • Absence of trained staff on duty	• Delay in reporting to health facility • Lack of transport from home to health facilities • Unsafe traditional/cultural practice • Unsafe self - medication treatment • Refusal of treatment • Delay in decision making • Use of traditional medicine /practices	• Failure to recognize danger signs • Failure to accept limitations • Use of traditional medicine • Lack of transport • Delay in deciding to refer.

Both qualitative and quantitative data can be analysed and utilized in one report as they complement each other and give deeper understanding of the issues being discussed and related to maternal death
The reports will be produced depending on the level. At a district and zonal level, a quarterly report will be produced while at the national level a biennial report will be produced

2.4.5 Guidelines for data analysis

The following activities need guidelines to be developed

a) Training the data collectors for 2 days
b) Training and supervision for the data clerks for 2 days
c) Data analysis to be conducted by an epidemiologist
d) The NCCEMD to have an editorial sub-committee to go through data analyzed and guided by epidemiologist.

e) The whole NCCEMD to receive and agree on the finding before a formal report is printed and distributed.

3 Response

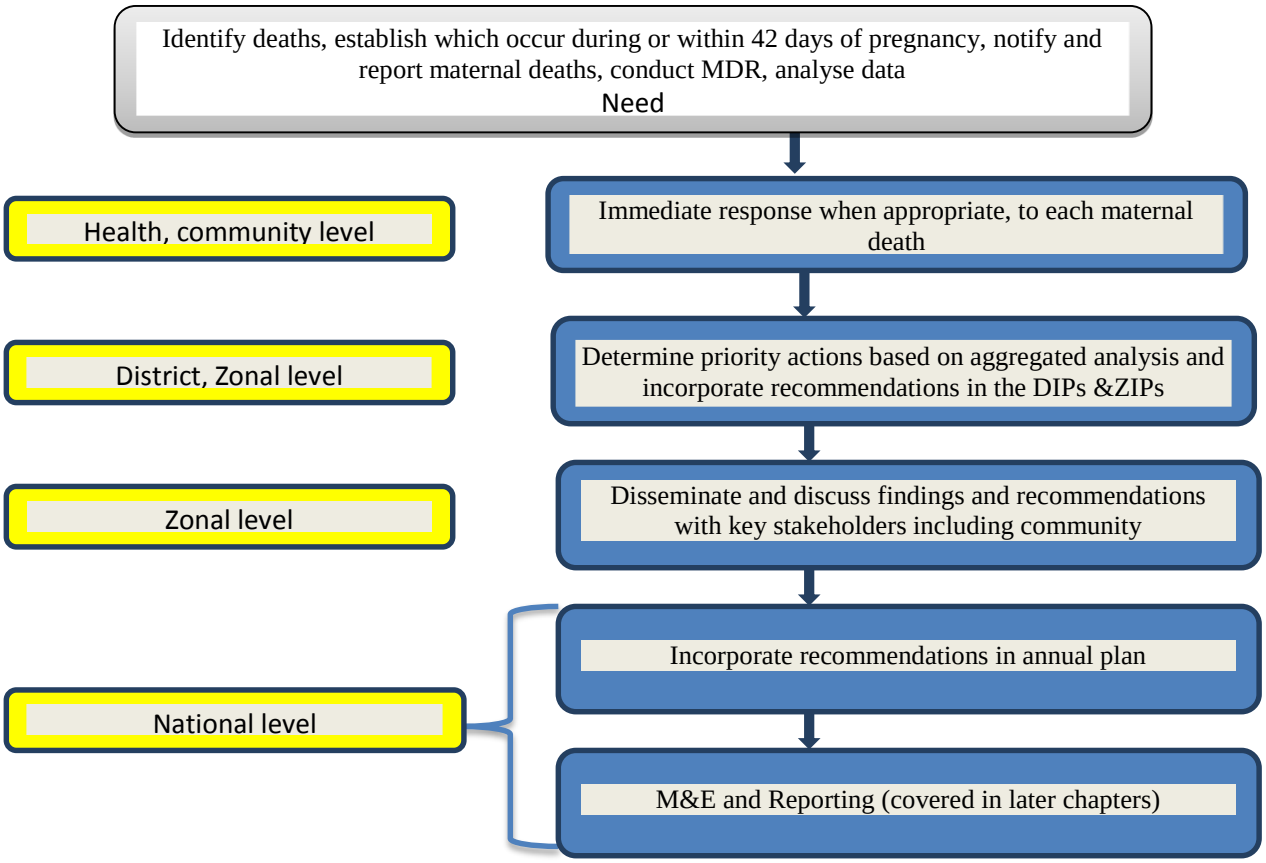
Taking action to prevent maternal deaths is the primary objective of MDSR. In most reviews, multiple problems will be identified, and a number of potential actions will be recommended. There is need to prioritize recommendations for action based on a particular situation. Response may be immediate or later; but also response will be done at different levels including where the death occurred, (community or health unit), at zonal and national level.

Response and data flow to the MOH

The data flow chart below gives instructions on where and how to send the data through the required channels and how to provide feed-back. Helpful guidelines should also include clear specifications of the review process at each level, including legal and advocacy information and contacts.

Need to include ways of identifying maternal deaths in the other wards within the health facilities (Refer to figure 3.1)

Figure 3.1 Response and data flow to the MOH



The *Immediate response* to findings from MDSR can lead to immediate action to prevent similar deaths from occurring. This is particularly true for deaths at health facilities. A maternal death review identifies gaps in areas that should be addressed quickly such as inadequate coverage of emergency

services by skilled providers; lack of essential obstetric medications or supplies; need to improve knowledge or skills of providers in the management of obstetric emergencies; or need to improve services such as antenatal care or family planning. There is no need to wait for aggregated data to begin implementing actions to prevent maternal deaths.

Periodic response will be monthly or quarterly (depending on numbers) of aggregated findings should take place at larger health facilities, at the district level and at zonal level. These periodic reviews usually show a pattern of particular problems that are contributing to maternal deaths, or particular geographic areas where maternal deaths are occurring in greater numbers. Such findings should result in a more comprehensive approach to addressing the problem across multiple facilities or across multiple communities. Where areas at greater risk are identified, discussion with the involved communities should be a priority to identify solutions. Actions are prioritized based on potential impact on reducing maternal mortality as well as feasibility including costs, resource requirements and ease of implementation, e.g. **Box 3.1.** Recommendations for action are incorporated in an annual district maternal health plan. The district plan will incorporate other sources of information. Actions at the district level may include health-system strengthening and staff retention, resource mobilization, increasing community and institutional awareness of maternal mortality, fostering community-facility partnerships and building alliances with the private sector, and advocacy activities.

Annual response will occur at National level with recommendations incorporated within the national annual work-plans for the Reproductive Health Directorate. Findings from the analysis of aggregated data and recommendations from the districts and results of confidential enquiry done at national level committee are incorporated in a national report that contributes to a national maternal health plan. At the national level the response will also involve development of a longer-term strategic plan (3-5 years) to focus on key priorities identified in many districts, or on key zones where more women are dying or the risk of dying is greater. Actions may include allocating required resources to the most affected areas and populations. Actions at the national level may also include changing or updating national policies, laws or guidelines.

Guiding principles for response include:

- Start with the avoidable factors identified during the review process
- Use evidence-based approaches
- Prioritize (based on health impact, feasibility, costs, resources, health system readiness)
- Establish timeline (immediate, short, medium and long term)
- Decide how to monitor progress, effectiveness, impact
- Integrate within existing health planning and health-system packages
- Implement evidence based interventions

Box 3.1: Causes of maternal death and possible prevention strategies

Cause	Possible prevention strategy
Post-partum Haemorrhage	Primary prevention: Active management of third stage of labour (oxytocin, controlled cord traction, uterine massage), misoprostol Secondary prevention: timely diagnosis and treatment of postpartum haemorrhage (blood, misoprostol, oxytocin, balloon catheters, surgical interventions, Non- Pneumatic Anti-Shock Garments-NASG)
Preeclampsia/	Primary prevention Early initiation of FANC visits ; Secondary prevention:

Cause	Possible prevention strategy
Eclampsia	magnesium sulphate, timely delivery
Gender-based Violence	Primary prevention: prevention of unwanted pregnancy / family planning (emergency contraception) Secondary prevention: working with communities to understand issues of masculinity and femininity, linking up services with Victim Support Unit (VSU), multi-setoral to the problem, shelters for abused individuals
Abortion	Primary prevention: prevention of unwanted pregnancy / family planning Secondary prevention: provision of safe comprehensive abortion care services, post-abortion care
Sepsis	Primary prevention: facility delivery, proper use of the partograph to avoid prolonged labour, antibiotics for premature rupture of membranes Secondary prevention: antibiotics and proper monitoring to avoid further complications
Obstructed Labour	Primary prevention: facility delivery after 12 hours of labour, appropriate use of partographs, availability of C-section and anaesthesia Secondary prevention: treatment of haemorrhage, shock and sepsis
Indirect causes	Primary prevention: Earl y ANC attendance, good nutrition, exercise, IPT, treated bed nets/spraying, post-exposure prophylaxis for HIV Secondary prevention: iron/folate supplements, de-worming, malaria treatment, ART

Some countries have used new technology to provide innovative interventions to assist with care to prevent maternal mortality [12]. Malawi will explore innovative ways of incorporating new technology like mobile phones, internet-based communication to improve maternal health care and prevent mortality.

Advocacy in MDSR

Advocacy is a political process by an individual or a group that aims to influence behaviour, policy and resource allocation decisions within political, economic, and social systems and institutions"

Successful advocacy takes rigorous, in-depth research, careful planning, and clearly-defined practical goals. It needs clear purpose, well-framed arguments and sound communication with audiences. Effective advocates survey the landscape (political, social and economic) carefully – before diving in. The evidence and stories behind the maternal deaths are the ingredients for powerful and effective advocacy. The NCCEMD in Malawi is well situated and suited to assume the advocacy role.

This will happen in many ways:

- Simply exposing the size of an issue
- Demonstrating patterns and trends
- Identifying causes of the patterns and trends
- Exposing education and training needs
- Exposing bottlenecks to influence change – e.g. access to drugs
- Identifying gaps or absent protocol or policies

May use the stories to support efforts to increase awareness of women and their needs as one way to use evidence to support the case for more or different resources. Advocacy efforts can be multifaceted. Through media – stories can be used to create awareness. There are many other advocacy methods. Choosing the best option depends on what needs to change and most effective route.

Response coordinators

The IDSR focal person at each level will facilitate responses at each level (e.g. community, facility, district, zonal, national) to ensure that action will be taken. The implementation of a response plan includes identifying roles and responsibilities and improving communication to ensuring actions are taken at each level. Regular stakeholder meetings at all levels will be important to share information particularly related to response..

3.1 Reports

There are two main types of reports from the MDSR system: report on maternal deaths (Monthly and weekly) and on the M&E of the system. The annual report provides information on the analysis of the maternal deaths, includes recommendations, and presents follow up on the responses, accomplishments and challenges. The M&E report assesses and evaluates the system and its capacity to respond to the recommendations..

Publishing a report is one of the primary ways to disseminate the findings and recommendations of MDSR. The report should be written in simple language, easy to follow and should include some standard sections identified in the box below. The scope, depth and breadth of the report may vary, depending on the approach that was chosen and the number of cases reviewed. Reports may be facility, district, zonal or national level.

- A single facility death review report may be an internal document and distributed to all facility staff, relevant decision makers in the facility, and colleagues outside the facility. The objective is to share the findings and recommendations. As it is likely that many people involved will know the identities of the deceased women's family and staff involved in the care, it will be particularly important to focus on positive recommendations, rather than placing blame.
- Annual facility-based MDSR report may have broader audiences including: all the facilities involved in the review, other facilities in the area (public and private), decision makers, teaching institutions, as well as national authorities and the public (community).
- A district MDSR report may be distributed to leaders of the area of the review, individuals involved in local programs, district or health officials at both national and Zonal level.
- Zonal MDSR report: The purpose is to share the review results from several districts to compare the results and make cross cutting recommendations. This report may be shared by the constituent districts, other districts to learn lessons, national committee, development partners in the zone and any other stakeholders, and MOH.
- A national MDSR report, which in Malawi is scheduled to be produced biennially.

The national report tends to be large and detailed. Reports are not useful if they cannot be widely disseminated due to size and expense. Rather, we recommend a policy brief for distribution to health care workers, community representatives, and other stakeholders.

These summaries could take the form of a simple newsletter or short booklet, preferably with an introduction written by the Ministry of Health or leaders of health care professional organizations. Innovative ways may be used for disseminating the message such as text messaging key findings and suggested interventions.

Though we are referring to these reports as "annual, or biennial", the frequency of their publication will depend on the number of maternal death cases reviewed depending on the population and mortality rates. As deaths become rarer and the reviews focus on selected problems, the periodicity of the reports may be adjusted as found fit. Additional reasons to publish include sharing information on innovative programs and use of technology with those in other parts of the country and indeed the world.

A standard MDSR report will have but not limited to the following sections

1. Background of area covered by review.
2. The health system within which maternal services are being offered
3. Characteristics of women of reproductive age in area.
4. Characteristics of births in area (numbers, live, fresh and stillborn (fresh vs. macerated), perinatal deaths, birth weight, gestational age etc).
5. Maternal deaths by area, mother's age, ethnicity etc (MMR if possible
6. Proportion of maternal deaths by medical cause of death.
7. Case fatality rates for facilities.
8. Contributing factors from health sector and community (medical cause and non-medical cause and their frequencies)
9. Recommendation to prevent future deaths
10. Review of recommendations from previous year and decide whether they were implemented or not; if not, why not.
11. Lessons learned from the implementations and innovations that seem to have worked
12. Develop and disseminate findings and recommendations

Dissemination of results

This must follow three principles and can make use of several channels.

a) There should always be a feedback of the findings and the recommendations right down to the level of the hospital/ facility or the community where the information was collected.
b) Secondly, this feedback should be in an aggregated or de-identified format so that the individual families or health care providers cannot be identified.
c) Legal safeguards should be in place to prevent the use of the review findings for litigation.

During the process of data analysis, the factors contributing to maternal deaths often become apparent early on. The actual recommendations should be developed and linked with plans of action, identify responsible lead, and timelines. Furthermore, the more quickly a final report is generated after the end of the reporting period, the more immediate impact it will have on local practice.

A plan for the dissemination of the results of MDSR should be pre- determined before the data analysis, although flexibility should be in- built since the results will not be known until the data from the review are analysed. The format and dissemination of the results depend on local circumstances and available resources.

It is a key principle of any report, published or otherwise that the team involved in undertaking the MDR be fully involved in the review process, developing the recommendations, planning and promoting their implementation, and act advocates for change.

The published MDSR report at any level should focus on ways to improve the system rather than single out particular errors that have been committed. Before publication, the contents should be carefully reviewed to avoid breaches in confidentiality and misuse of information.

The dissemination of the results can use a variety of channels to allow for a wide range of people to access the report and ensure that the information gets to the right audience, namely those who can act on the recommendations. If specific causes of deaths are identified as particularly problematic, conferences or seminars can be held to educate health staff and any other people. Summaries of key findings and recommendations are cheaper and easier to disseminate widely than large documents arising from detailed data collection. Similarly, reports published solely in professional journals tend to be overlooked by other people concerned with improving the quality of maternal health. In general, the shorter the document, the more widely read it is likely to be. The potential recipients should be identified in advance, and the recommendations should be written in such a way that they are easily understood by a wide audience and also easily picked up by specific interest groups.

Who to inform of the results

The type of groups or individuals to consider when disseminating the review findings depends on the scope and scale of the approach used. The general principle is to get the key messages to those who can implement the findings and make a real difference towards saving mothers' lives. They may include:

- Ministries of Health
- District, zonal, and/or national health care planners, policy-makers and politicians
- Professional organizations and their members, including pediatri, cians, community and general physicians, obstetricians, midwives, anaesthetists and pathologists who are involved at each level
- Leaders in other health care systems, such as CHAM and the private sector
- Health promotion and education experts
- Health insurance companies (if applicable)
- Public health or community health departments
- Academic institutions
- Local health care managers or supervisors
- National or local advocacy groups
- The media
- Representatives of specific faith or cultural institutions or other opinion leaders who can promote and facilitate beneficial changes in local customs
- All those who participated in the survey

Dissemination methods

Reports are one of the commonest and useful means of information dissemination. If problems are identified in the community, it is important that the people whose lives are involved feel that they are

participants in the process and that they are informed of the findings. This is true whatever the level of the MMR.
The following are all methods that have been used for dissemination of results:

Community/facility level	Zone or national level
• Team meetings • Thematic seminars at facilities • Community meetings • Radio programmes • Printed reports • Training programmes • Posters • Text messages • Video clips • Applications for smart phones	• Printed reports for policymakers • Statistical publications • Scientific articles • Professional conferences • Training programmes • Media • Press releases • Websites • Newsletters and bulletins • Fact sheets • Posters • Video clips

3.2 Monitoring and Evaluation for MDSR

Framework for monitoring and evaluation

Monitoring and evaluation of the MDSR system is needed to ensure that the major steps in the system are functioning adequately and improving with time. It is also important to assess the timeliness of the information and the coverage of the system. Monitoring of the MDSR system is carried out primarily at the national level. However, some of the indicators are also pertinent to the district and zonal levels and permit assessments of whether the system is improving. Table 3.2.1 shows a monitoring framework with some indicators to be assessed annually.

Evaluate and improve the system so it has an impact

In addition, to the monitoring indicators that provide a quick snapshot of whether the system is improving, periodically a more detailed evaluation is useful particularly if i) the indicators demonstrate that one or more of the steps in the MDSR process is not reaching expected targets, or ii) if maternal mortality is not decreasing. Since the main purpose of MDSR is to lead to action to reduce maternal deaths if this is not happening the system is failing. A more detailed evaluation can also be used to assess whether the system can function more efficiently. Ideally, an evaluation of the quality of information provided would also take place periodically.

Surveillance system attributes that are particularly important to evaluate MDSR include: acceptability, timeliness, data quality and stability [13, 14].

Efficiency

A periodic evaluation should examine how efficient the system is. How well does it use both its human and financial resources? Is the system running smoothly or are there barriers to its operation? If so, how can they be overcome? Is staff-time spent doing any particular MDSR tasks overly burden some? If so, how can these be corrected? Is the system electronic? Are there innovative IT solutions that will decrease the paper load?

Effectiveness

Evaluation of effectiveness determines if the recommendations for action have been implemented, if they are achieving the desired results and if not, where any problems may lie. Exactly how this effectiveness evaluation should be carried out will depend on the particular circumstances in each community, facility, or health care system. It starts with a determination of *if* and *how* the specific MDSR findings and recommendations have been implemented, and whether they are having the expected impact.

Table 3.2.1: MDSR monitoring indicators and targets

INDICATOR	TARGET
Overall system indicators	
Maternal death is a notifiable event	Yes
National maternal death review committee exists	Yes
- that meets regularly	At least quarterly
National maternal mortality report published biennually	Yes
% of districts with maternal death review committees	100%
% of districts with someone responsible for MDSR	100%
% of districts s with zero reporting weekly	100%
Identification and reporting	
Facility:	
All suspected maternal deaths are notified	Yes
- % reported within 24 hours	>90%
Community:	
% of community maternal deaths reported within 48 hours	>80%
Review	
Facility	
% of tertiary hospitals with a review committee	100%
% of facility maternal deaths reviewed (including clinics)	100%
Community	
% of verbal autopsies conducted for pregnancy related deaths	100%
% of reported maternal deaths that are reviewed by district	100%
District and tertiary	
District and central hospital MDSR committee exists	Yes
- and meets regularly(within 7 days) to review facility and community deaths	100%
- % of review that included community information in the review process	100%

INDICATOR	TARGET
Data Quality Indicators – % MDA2 form filled correctly and completely % MDA2 form submitted timely	 100% 100%
Response *National , Zone, District Facility and Community* % of committee recommendations that are implemented	 >80%
Reports National Committee produces biennual report IDSR produces weekly report Zones produce bi-annual report District committee produces quarterly report and submit to Zone	 Yes Yes Yes Yes
Impact Case fatality rate	 Less than 1%

4 MDSR Implementation Plan

An enabling environment is critical to the success of MDSR. A situational analysis provides information needed for planning and assists in identification of key support mechanisms and gaps that must be addressed for successful implementation or strengthening of MDSR. It also provides information that can be used to develop a monitoring and evaluation plan and to bring different stakeholders together and motivate partners to invest in the system itself. In this context, a **situational analysis** is a systematic collection and evaluation of past and present health, economic, political, social and technological data, aimed at identifying internal and external forces that may influence the establishment and strengthening of a surveillance system.

Components of a situational analysis

Situation analysis gives an opportunity to take stock of current efforts to identify, review and respond to maternal deaths; and assess successes and challenges. The situational analysis should include information on the factors that impact the development and support of MDSR. It is important to keep in mind that the information collected will be used for action. Appendix 5 provides a detailed list of potential topical areas for a situational analysis. Data gathered could include but is not limited to:

- Non-health context – political, legal, demographic/socioeconomic and geographic
- Existing health information infrastructure particularly activities related to MDR and IDSR
- Available resources, logistics, and technology
- Country priorities and plans for MDSR already in place

The political, legal, demographic/socioeconomic and geographic context

Political support for maternal mortality reduction is paramount for this MDG to be achieved. Malawi has made great strides in involving the political leaders, development partners and other non-governmental organizations that are interested and will champion MDSR. More stakeholders need to be identified and efforts made to include all those whose personal or political actions impact on maternal health.

Important issues to consider could include:

- **Is maternal mortality clearly identified as a health priority?**
- **Are there key leaders who will champion maternal mortality and MDSR as a personal and political action point?**
- **Are there key organizations or professional associations that can be of assistance? E.g. are there midwifery or medical associations that will support efforts to reduce maternal mortality?**
- **Are there other important private partners that are involved in the system?**

The MOH will take the lead on MDSR, although other Ministries need to be involved for an adequate response to maternal mortality. Early identification of the leaders and stakeholders within the MOH that should be included in the MDSR efforts is essential. Representatives from sections such as vital

statistics, surveillance, health planning, health management information systems (HMIS), training, and finance should be considered during the MDSR planning process. Other related ministries or sectors that may ensure an adequate response include Education, Housing, Transport and Communication, Water, Justice, Local government, Gender and Social Welfare. Establishing their participation is important because they can support actions needed outside the health sector that contributes to reducing maternal mortality. In some settings it may also be important to involve non-governmental stakeholders. Identification of priorities, progress, and next steps on implementation of the MDSR framework within in the WHO CoIA recommendation implementation framework [15] is an important exercise and should be carried out at the national level as a first step in developing or strengthening MDSR.

Legal

The legal climate and a country's laws can have a significant impact on MDSR by helping or hindering access to information, involvement of families and health care professionals, the conduct of surveillance and response, and the ways the findings are used. Fear of lawsuits may lead to hiding information about a maternal death, not participating in reviews or to the abandonment of maternal death reviews altogether. Exploring ways to increase legal protection and make individuals more willing to participate in the review or provide information about the death is important. Professional organizations can play an important role in ensuring medical practice is aligned to accepted standards and providing legal protection for their members but also for all other health workers. Implementers should also identify any legal regulations that may affect dissemination of findings.

Demographic and geographic considerations

The population distribution and country demographic structure is needed to determine the number of expected births and deaths and the resources required for establishing an MDSR system. Additionally, this information is critical for analysis and interpretation of the results.

The population's education, residence, employment and cultural aspects need consideration when setting up or expanding MDSR. Many of these factors determine health seeking behaviors and will have an influence on the success of actions identified by MDSR to reduce maternal mortality. Ethnic and language minorities and marginalized populations should be identified as they may be at higher risk of maternal death.

Ensuring updated maps of facilities that provide basic and comprehensive EOC is a critical element. Geographic information is key to identifying where to expand existing systems. Mapping the location of towns and health care facilities, roads, rivers, and other geographical details that influence access, can provide valuable information for planning. Layering information on population distribution can also help identify areas with limited access or low population density that may explain findings from MDSR and determine timing and selection of targeted interventions.

Health system structure and health status of the people

Understanding which parts of the health system are already working on components of MDSR (e.g. maternal death as a notifiable event, MDR) and evaluating what other partners do (e.g. NGO, private,

research) is important to the implementation of MDSR. Issues to consider before roll-out of MDSR include the health workforce and their roles and responsibilities and their variation within the country. Who principally interacts with the women? Are they cared for by consultants, medical officers, nurses, midwifes, nursing aides, traditional birth attendants, traditional healers, social workers, others or multiple people? What is the human capacity of the healthcare system? Are there staffing shortages or constraints? How has the health care system dealt with these constraints? These are important considerations for the success of the MDSR, especially for ensuring an effective response.

Existing health information infrastructure

Information on maternal deaths is collected from health facilities and communities. It is important to understand the systems utilized in these two primary sources that can provide information related to maternal death. Likewise the flow of information to the district and national level, and how it is aggregated, should be mapped. The coverage of the information system network, for both facilities and communities should be assessed.

These key questions also form part of the M&E process as the health system continues to improve because of MDSR:

What components of MDSR are already in place and where?

Is it currently active?

If more than one system that reports maternal deaths is currently in place, how do these systems interact?

What is the status of the vital registration system?

What percent of births and deaths are estimated to be registered?

Does the death certificate include a checkbox for pregnancy?

Is maternal death a notifiable event?

Where are birth and death data collected?

What linkages are there between MDSR and the vital registration system?

What other studies have been done or systems are in place to assess maternal mortality (DHS, Disease Surveillance System (DSS)?

Is there an Integrated Disease Surveillance and Response System (IDSR) [4] in place, and if so, does it report the number of maternal deaths?

It is also useful to assemble and examine all relevant, available data or other sources of information (such as informal surveys) on maternal events and health care services in the proposed surveillance areas. Types of information that could be helpful include the approximate number of deliveries and maternal deaths and their distribution by place of occurrence (home, health centre, public, private, or

other type of hospital [including level]) and estimates of distribution of deaths by cause. These resources will assist in the analysis phase. Identification of indicators – those collected and those missing - can provide a foundation for establishing a monitoring and evaluation system.

Resources, logistics and technology

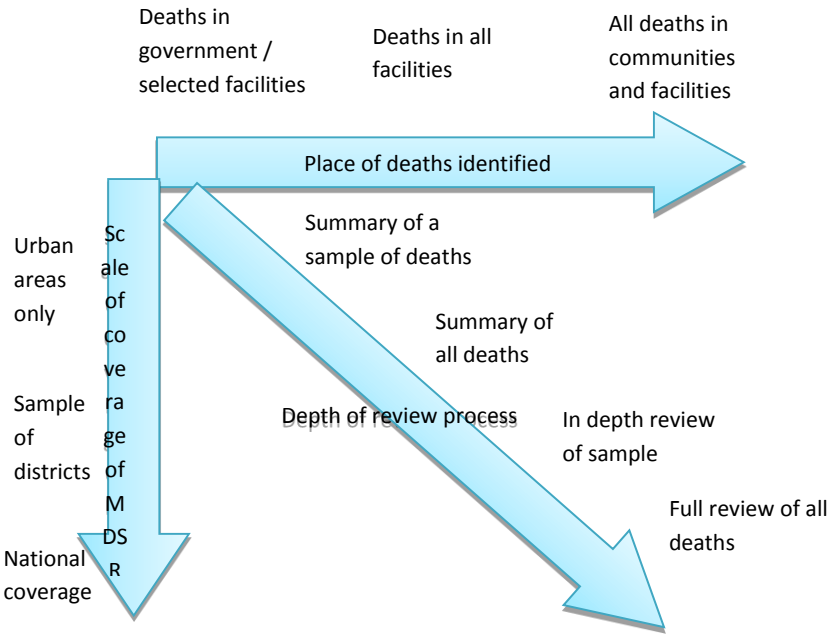
Notifiable events should be reported quickly, ideally within 24hours. This requires an assessment of the communication technology available in communities and at health facilities. Cell phones are increasingly permitting communication with and from communities. At health facilities, cell phones, radios, land lines or e-mail can be used. Likewise, data collections benefits from information technology such as computers, hand-held devices or tablets. This can shape the communication mechanisms used for reporting deaths as well as the responses designed for intervention. Identification of the current state of resources (human, financial, and technological) that are available for use by the system is important, as are anticipated changes in resources.

Implementation

Implementation is ”a specified set of activities designed to put into practice an activity or program of known dimensions” [16]. In order to achieve the goals and objectives of MDSR a plan is needed for its implementation. This will start at the national level with the convening of a group of experts from within the Reproductive Health Department and NCCEMD to develop and monitor the implementation process.

A review of the results of the situational analysis in the proposed surveillance area(s), including the mapping of the geographical towns, health facilities and infrastructure is a first step. Implementation of an MDSR system can seem daunting; however, a phased approach can break the process into manageable pieces. Malawi could start in the urban areas in health units which have already been conducting MDR to introduce surveillance to all wards caring for women in reproductive age to identify maternal deaths. When this is established, the process could go to all health units including private hospitals, and later extend to all districts; and lastly to communities. Figure 3.1 shows a typical progression when scaling up a national system. On the X-axis, there is expansion of the places where deaths are identified from government/selected facilities only to all facilities and finally all including the community. Facility based deaths are usually easier to capture than community based deaths and MDSR should include deaths occuring at community.

Figure 4.1: Main Dimensions for a Phased Roll-out of MDSR system



The goal should be to identify all deaths and this portion of the figure captures progression toward that goal. On the Y axis, there is expansion of the scale of coverage of the MDSR system. From starting in urban areas only within selected district to then including a sample of entire districts, the final goal is to have national coverage. The depth of the review process is shown in the center of the figure, moving deeper. Though the system may begin with a sample summary of deaths, the progression should include move toward a deeper probing into maternal death and finally a full review of all deaths. Activities are planned for each individual year to expand the program, keeping in mind the many options for expansion.

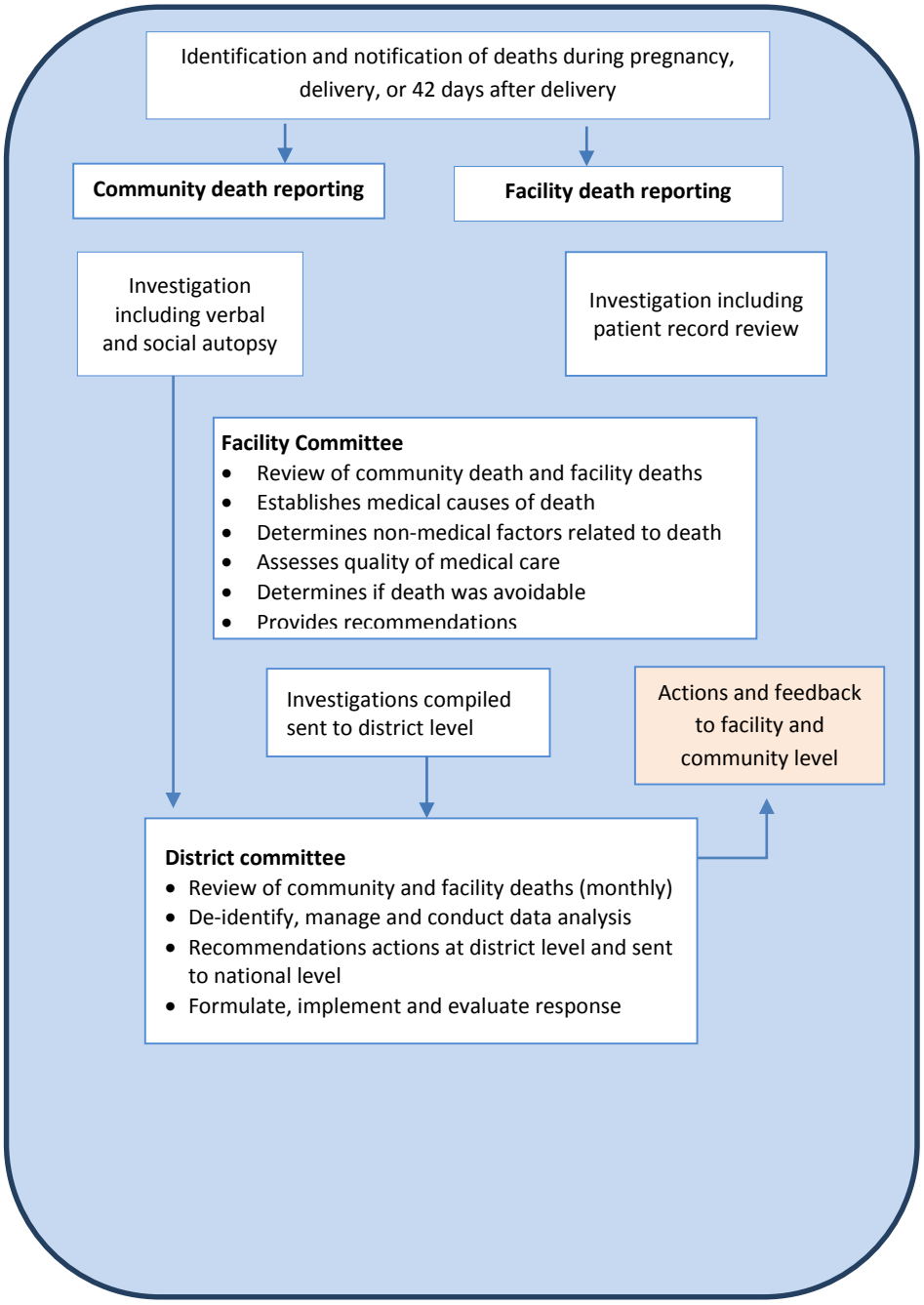
Resource considerations

The scope of MDSR will depend on the availability of required resources. Having a sense of the number of births and deaths, where families live, where they received care and where the deliveries and deaths occurred will help to determine the amount of travel required and cost to collect information. This, in turn, will have an impact on whether all, or a subset of the cases, can be reviewed or if the review should concentrate on particular places or causes of mortality or morbidity. Either way, resources needed and costs to strengthen surveillance system and response must be calculated and put into consideration right from the onset of planning MDSR. An example of a cost tool from IDSR could be found at: http://www.cdc.gov/globalhealth/dphswd/idsr/tools/survcost.html. While deciding on such issues, those leading the process may find it helpful to draw on the experience of other groups or countries which have instituted a similar review approach.

Expansion strategy

The implementation plan will build on the already existing MDR system to ensure that eventually all deaths are identified, notified and reviewed. Before moving to the next planned stage, review of current data should occur to determine if the team is ready to move to the next step. If data are not of adequate quality, expanding the system will only provide more data of poor quality. Instead, the focus should be on improving what is currently collected. Figure 3.1 depicts a fully scaled-up MDSR system.

Figure 4.2 Processes within a fully scaled-up MDSR system



5 References

1. WHO/UNICEF/UNFPA and The World Bank, Trends in maternal mortality: 1990-2010: WHO, UNICEF, UNFPA and The World Bank estimates, 2012, World Health Organization: Geneva, Switzerland. p. 1-59.
2. Royston E and Armstrong S, eds. Preventing Maternal Deaths. ed. World Health Organization1989, World Health Organization: Geneva.
3. Court, C., WHO claims maternal mortality has been underestimated. BMJ, 1996. 312(7028): p. 398.
4. Pearson, L., L. deBernis, and R. Shoo, Maternal death review in Africa. Int J Gynaecol Obstet, 2009. 106(1): p. 89-94.
5. (National SRHR Policy, 2009)ef:National sexual and reproductive health and rights policy, Ministry of health; 2009.
6. Government of Malawi situation analysis on human resource, June 2003, Lilongwe, Malawi
7. World Health Organization, Beyond the Numbers: Reviewing maternal deaths and complications to make pregnancy safer World Health Organization, Editor 2004, World Health Organization: Geneva, Switzerland.
8. Centers for Disease Control and Prevention. Epi Info 7.0. [cited 2012 April 3]; Available from: http://wwwn.cdc.gov/epiinfo/7/index.htm.
9. World Health Organization. Mobile Health (mHealth). [cited 2012 April 3]; Available from: http://www.who.int/goe/mobile_health/en/index.html.
10. Kongnyuy, E.J. and N. van den Broek, The difficulties of conducting maternal death reviews in Malawi. BMC Pregnancy Childbirth, 2008. 8: p. 42.
11. Fottrell E, et al., Revealing the burden of maternal mortality: a probabilistic model for determining pregnancy-related causes of death from verbal autopsies. . Popul Health Metrics, 2007. 5.
12. http://www.youtube.com/watch?v=Uiirg0szrnA
13. Buehler, J.W., et al., Framework for evaluating public health surveillance systems for early detection of outbreaks: recommendations from the CDC Working Group. MMWR Recomm Rep, 2004. 53(RR-5): p. 1-11.
14. German, R.R., et al., Updated guidelines for evaluating public health surveillance systems: recommendations from the Guidelines Working Group. MMWR Recomm Rep, 2001. 50(RR-13): p. 1-35; quiz CE1-7.
15. World Health Organization. Commission on information and accountability for Women's and Children's Health: Keeping Promises, Measuring Results. . 2011; Available from: http://www.who.int/topics/millennium_development_goals/accountability_commission/Commission_Report_advance_copy.pdf.
16. Fixsen D.L., et al., Implementation research: A synthesis of the literature . The National Implementation Research Network. , ed. F.P.N. 2312005, Tampa: University of South Florida,: Louis de la Parte Florida Mental Health Institute

6 APPENDICES

Appendix 1: MDA 1 form

MINISTRY OF HEALTH

CONFIDENTIAL

MATERNAL DEATH NOTIFICATION FORM

A. GENERAL INSTRUCTIONS

- This form must be completed for all suspected maternal deaths (including indirect deaths, abortions, molar and ectopic gestation) occurring up to 42 days following delivery / termination of pregnancy.
- This form must be completed immediately after death by the last person who attended to the patient in the facility within 24 hours or within 48 hours when death occurred within the community (by HSA or CHN). The original should be submitted to the zonall level with copies through the district and zonal level.
- Coding must be done at district level with code of district, code of HF (catchment area) where death occurred and individual code for each deceased.

B. DETAILS OF THE DECEASED

1. **Name (initials) of the Deceased:** _____

2. **MD Case Number:** ☐☐☐ **Unique identifier**

3. **Admission Number (*h/facility*):** ☐☐☐☐☐☐☐☐☐☐☐☐

4. **Address:** _____

5. **Age (years):** ☐☐ (estimate if age is unknown)

6. **Locality where death occurred**

District		Name of Health Facility/Village		Code	

7. **Place of death: (√ one box):**

1. Central Hospital ☐
2. District/CHAM/Private Hospital ☐
3. Community/Rural Hospital ☐
4. Health Centre/Private clinic ☐
5. Maternity Unit ☐
6. TBA/Community ☐
7. On the way/before arrival to H/F ☐
8. Other ☐ (*specify*) _____

8. **Ownership of health facility (√ one box):**

1. MOH ☐
2. CHAM ☐
3. Private-for-profit ☐
4. Local Government ☐
5. Other ☐ (*specify*) _____

9. Condition at admission----------Stable; critically ill; dead on arrival

10. Suspected cause of death (√ one box):

1. Haemorrhage ☐
2. Obstructed/Prolonged Labour ☐
3. Ruptured uterus ☐
4. Puerperal Sepsis ☐
5. Pre/Eclampsia ☐
6. Complications of abortion ☐
7. Ectopic Pregnancy ☐
8. Anaemia ☐
9. HIV/AIDS ☐
10. Other (Please specify) ☐
11. Unknown _____

11. Condition at the time of death: During pregnancy ☐ during delivery ☐ immediate post-partum period (within 24 hours) ☐ long after delivery (after 24 hours but within 42 days") ☐ Abortion ☐ Ectopic ☐

12. Date of Admission: _____ **13. Date of Death: _____**

14. Outcome of newborn (√ one box):

1. Alive ☐
2. Fresh SB ☐
3. Macerated SB ☐
4. NND ☐
5. N/A (early pregnancy) ☐

Comment……

15. Signature: _____ 15. Name: _____ 16. Position: _____17. Date: _____

Appendix 2: MDA 2 FORM

MINISTRY OF HEALTH

CONFIDENTIAL

MATERNAL DEATH REVIEW FORM

GENERAL INSTRUCTIONS

- This form must be completed for all maternal deaths (including indirect deaths, abortions, molar and ectopic gestation) occurring up to 42 days following delivery / termination of pregnancy.
- District should review their own maternal deaths within 7 days and submit copies to zonal and national levels
- Central and private tertiary Hospitals should review their own maternal deaths within 7 days and submit the reports to the district where the central hospital is situated for onward transmission to the zonal and national levels and provide feedback to the district where the maternal death originated from.
- The District Maternal Death Surveillance and ResponseCommittee must make a follow up on the implementation of the action plan within 3 months. The original MDA2 should stay at district level and copies submitted to the facility where the death occurred and zonal/national level.
- Staff from referral facility should attend the MD Review meeting at district level
- The code must be the same code as that on the notification form, MDA1.
- Compile quarterly reports on all maternal death reviews and submit to DHO, Zonal and national offices.

1. DETAILS OF DECEASED

1.1 MD Case Number: ☐☐☐ **1.2 Admission No.:** ☐☐☐☐☐☐☐☐☐☐☐☐

1.3 Age (years): ☐☐

1.4 Physical Address or locality where patient lived:

1.5 Marital status: Married ☐ Single ☐ Divorced ☐ Widowed ☐ Separated☐

1.6 Educational level: None ☐ Primary ☐ Secondary ☐ Higher ☐

1.7 Condition at the time of death:

Undelivered: Gravida ☐☐ Para☐☐ Gestation (weeks) ☐☐

Delivered: Gravida ☐☐ Para☐☐ Days since delivery ☐☐ Gestation at delivery (weeks)☐☐

Others (specify)----------ie Ectopic, abortion----------

2. ADMISSION AT INSTITUTION WHERE DEATH OCCURRED

2.1 Date of admission to facility: ☐☐/☐☐/☐☐☐☐ (dd/mm/yr) **2.2 Time:** ☐☐:☐☐ AM/PM

2.3: Admitted from:
- Another facility ☐
- TBA ☐
- Home ☐
- Other ☐ Specify _____

2.4 Reason for admission (√ appropriate boxes):

1. Ante partum Haemorrhage ☐
2. Post partum Haemorrhage ☐
3. Obstructed/prolonged labour ☐
4. Ruptured uterus ☐
5. Postpartum sepsis ☐
6. Pre-eclampsia/eclampsia ☐
7. Complications of abortion ☐
8. Ectopic pregnancy ☐
9. Malaria ☐
10. HIV/AIDS ☐
11. Anaemia ☐
12. TB ☐
13. Hepatitis ☐
14. Others ☐ (specify) _____

2.5 Condition on admission: Stable ☐ Critically ill ☐ Dead on arrival (DOA) ☐

2.6 Date of death: ☐☐/☐☐/☐☐☐☐ (dd/mm/yr) **2.7 Time**: ☐☐:☐☐ AM/PM

2.8 Condition at moment of death: Antenatal ☐ Intrapartum ☐ Postpartum ☐ Abortion ☐ Ectopic ☐

3. ANTENATAL CARE

3.1 Did she receive antenatal care? Yes ☐ No ☐ Unknown *(skip to section 4)*

If "Yes",

3.2 total number of visits: ☐

3.2 Quality of ANC- HB, BP, SP, Heamatenics, HCT, Urine test, ARV /PMTCT, Syphillis

3.3 Any danger sign(s) identified: Yes ☐ No ☐ **3.4 If "Yes" specify:** _____

3.5 Any action taken on identified danger signs? Yes ☐ No ☐

3.6 If "Yes", Specify----------

3.7 Comments on actions taken:

3.8 Comments on the general of ANC provided

4. DELIVERY AND PUERPERIUM

4.1 Did delivery occur? Yes ☐ No ☐ *(skip to section 4.11)*

If "Yes",

4.2 Date of delivery: ☐☐/☐☐/☐☐☐☐ (dd/mm/yr) **4.3 Time:** ☐☐:☐☐ AM/PM

4.4 Was a partogram used? Yes ☐ No ☐ Unknown

Comments of appropriateness of use of partogram----------

Locality where labour started: (√ one box)

4.5 Level of facility: 1. Central Hospital ☐ 2. District/CHAM/Private Hospital ☐
3. Community/Rural Hospital ☐ 4. Health Centre/Private clinic ☐
5. Stand alone Maternity Unit ☐ 6. TBA ☐ Home
7. On the way/before arrival to H/F ☐ 8. Other, specify ☐

4.6 Ownership of health facility: (√ one box)

1. MOH ☐ 2. CHAM ☐ 3. Private-for-profit ☐ 4. Local Government ☐ 5. Other ☐

4.7 Duration of labour (hours:min):

1. Latent phase	2. Active phase	3. Second stage	4. Third stage
☐☐hrs ☐☐min	☐☐hrs ☐☐min	☐☐hrs ☐☐min	☐☐hrs☐☐min

4.8 Mode of Delivery: (√ appropriate boxes)

1. SVD ☐ 2.Breech ☐ 3. Vacuum ☐ 4. ☐ 5. Caesarean Section ☐

6. Destructive operation ☐ 7. Other ☐ *specify* _____

4.9 Delivered by: (√ one box)

1. Midwife☐ 2. Clinical Officer ☐ 3. Medical Officer ☐ 4. Obstetrician/gynaecologist ☐

6. Nurse ☐ 7. Medical Assistant ☐ 8. Other ☐ *specify* _____

4.10 INTERVENTIONS

4.10 Tick all applicable

Intervention	**Stage of intervention**			
	Early	**Antenatal**	**Intrapartum**	**Postpartum**
Evacuation				
Transfusion				
Caesarean section				
Hysterectomy				
Laparotomy				
Anticonvulsants				
Uterotonics				
Anaesthesia				
Plasma expanders (fluids)				
Anti- hypertensives				
Anti-Malarials				
Other drugs e.g digoxin, aminophylline, platelets, etc				
Intensive Care Unit admission				
Other (Specify)				

4.11 Comments on the quality of care provided (during labour, delivery or pueperium)

.....

.....

.....

.....

.....

.....

5. CAUSE OF DEATH

5.1Direct(Insert ICD 10 code number of the cause)

Computer wizards to ibnsert a table with the ICD10 codes

5.2 Indirect cause of death(Insert ICD 10 code number of the cause)

6. ASSOCIATED FACTORS THAT CONTRIBUTED TO DEATH

(√ appropriate boxes, after analysing/ discussing the information)

Factors	Causes	Yes	No	Detailed Remarks
6.1 Health worker factors	Inadequate midwifery skills			
	Delay in deciding to refer			
	Initial assessment incomplete			
	Inadequate resuscitation			
	Wrong diagnosis			
	Wrong treatment			
	Unsafe medical treatment			
	No treatment			
	Delay in starting treatment			
	Inadequate monitoring			
	Prolonged abnormal observations without action			
	Lack of obstetric life saving skills			
	No information			
	No avoidable factors			
6.2 Administrative factors	Communication problem between health facilities			
	Transport problem between health facilities			
	Lack of qualified staff			
	Lack of antibiotics			
	Lack of other essential obstetric drugs			
	Lack of essential equipment			
	Lack of laboratory facilities			
	Lack of availability of blood transfusion			
	Absence of trained staff on duty			
	No information			
	No avoidable factors			
6.3 Patient / Family Factors	Delay in reporting to health facility			
	Lack of transport from home to health facility			
	Unsafe traditional/cultural practice			
	Unsafe self medication treatment			
	Refusal of treatment			
	Delay in decision making			
	Use of traditional medicine / practices			
	No information			
	No avoidable factors			
6.4 TBA/community	Failure to recognise danger signs			
	Failure to accept limitations			

Factors	Causes	Yes	No	Detailed Remarks
factors	Use of traditional medicine			
	Lack of transport			
	Delay in deciding to refer			
6.5 Other factors - specify:				

7. NEONATAL INFORMATION

7.1 Was the baby weighed after delivery? Yes ☐ No ☐

If "Yes",

7.2 Birth weight (g): ☐☐☐☐

7.3 Was the Apgar score determined after delivery? Yes ☐ No ☐

If "yes",

7.4 5 min Apgar score: ☐☐

7.5 Outcome for newborn: (√ one box): Alive ☐ Fresh SB ☐ Macerated SB ☐ NND ☐

If NND,

7.6 Time of death: _____ **7.7 Date of death:** _____

7.8 Cause of Death (√ appropriate boxes):

Preterm baby ☐
Low birth weight ☐
Asphyxia ☐
Hypothermia ☐
Sepsis ☐
Neonatal tetanus ☐
Diarrhoea ☐
Birth defect ☐
Others ☐ (specify) _____

8. CASE SUMMARY (*supply a short summary of the events surrounding the death including quality of care at all levels*)

_____

_____

_____

_____

_____

_____

_____

9. MATERNAL DEATH SURVEILLANCE AND RESPONSE COMMITTEE (DMDRC) ACTION PLAN TO IMPROVE FUTURE CARE

Level of Care	Proposed Activities	Proposed Time Frame	Resp. Person
National			
Zonal			
District /Hospital			
Health Centre			
TBA/Community			
Family			

10. COMPLETED BY:

10.1 Name(print):_____**10.2 Position:** _____

10.3 Telephone: ☐☐☐☐☐☐☐☐ **10.4 Fax:**☐☐☐☐☐☐☐☐ **10.5 E-mail**: _____

10.6 Date: ☐☐/☐☐/☐☐☐☐

10.7 Signature: _____ (Chairperson of Review Committee)

****

10.8 Name of CHD/DHO/DNO/CNO: _____ **10.9 Position:** _____

10.10 Signature: _____ **10.11Date:** ☐☐/☐☐/☐☐☐☐

10.12 List of members present

Appendix 3: MDA 3 FORM

MINISTRY OF HEALTH

CONFIDENTIAL

MATERNAL DEATH SURVEILLANCE AND REPSONSE (MDSR) FOLLOW UP FORM

GENERAL INSTRUCTIONS

- This form must be completed by the Zonal/National Maternal Death and Surveillance Committee
- The code must be similar with the code on MDA1 and MDA2

1. MD Case Number: ☐☐☐

2. Admission number: ☐☐☐☐☐☐☐☐☐☐

3. Date of Notification: ____/____/_____

4. Date of MD Review by District Maternal Review Committee: ____/____/_____

5. National:……..Zone: _____ **6. District:** _____ **7. Facility:** _____

8. Direct Cause of Death: ……

9. Indirect Cause of Death: ……..

10. Principal avoidable factors:

1. ……
2. ……
3. ……..

11. Major action points:

	Proposed activities	**Activities done / Remarks**
National		
Zonal		
District/Hospital level		
HC level		
TBA		
Family/Community		

12. If proposed activities not done, indicate reason(s):
(The focal person to explain in person)

……

……

……

13. Remarks of Zonal/National MDSR:

……

……

……

14. Signature: ……..... **15. Name**: ……..

16. Position: ……..... **17. Date:** ……

Appendix 4: Maternal death reporting form for IDSR

Maternal Death Reporting form

Maternal Death Surveillance and Response Reporting Form		
The form must be completed for all deaths, including abortions and ectopic gestation related deaths, in pregnant women or within 42 days after termination of pregnancy irrespective of duration or site of pregnancy. ***The form must be completed within 7 days by the IDSR focal person together with the Safe Motherhood Coordinator after the MD review*** ***The form must be forwarded the national IDSR focal person in the epidemiology unit***		
Questions / Variables		**Answers**
1	Zone	
2	District	
3	Reporting Site (The unit reporting the death?)	
5	Date this maternal death occurred (day/month/year)	
6	Name of village or town where the death occurred	
7	Record's unique identifier (year-District-site-maternal death rank)	
8	Place where death occurred (Community, health facility, district hospital, referral hospital or private hospital, on the way to health facility or hospital)	
9	Age (in years) of the deceased	
10	Gravida: how many times was the deceased pregnant?	
11	Parity: how many times did the late deliver a baby of 28 weeks or more?	
12	**Condition at the** time of death (specify "During pregnancy, during delivery, immediate post-partum period (within 24 hours), or long after delivery (after 24 hours but within 42 days")	
13	If abortion: Before or after PAC or laparotomy?	
	If ectopic: Was it before or after surgery?	
Maternal death history and risk factors		
14	Was the deceased receiving any antenatal care? (Yes/No/unknown)	
	Did she have Malaria? (Yes or No/unknown)	
15	Did she have high BP ? (Yes or No/ unknown)	
16	Did she have Anaemia? (Yes or No/ unknown)	
17	Did she have Abnormal Lie? (Yes or No unknown)	

Maternal Death Surveillance and Response Reporting Form

The form must be completed for all deaths, including abortions and ectopic gestation related deaths, in pregnant women or within 42 days after termination of pregnancy irrespective of duration or site of pregnancy.

The form must be completed within 7 days by the IDSR focal person together with the Safe Motherhood Coordinator after the MD review

The form must be forwarded the national IDSR focal person in the epidemiology unit

	Questions / Variables	Answers
18	Had she had a Caesarean Section before? (Yes or No unknown)	
19	What was her HIV Status? (choose "HIV+; HIV-; or Unknown")	
	Delivery, puerperium and neonatal information	
20	How long (hours) was the duration of labor?	
21	What type of delivery was it? (choose one from "1=Vaginal non assisted delivery, 2= vaginal-assisted delivery (Vacuum/forceps), or 3=Caesarean section, 4= undelivered, 5= laparotomy for ruptured uterus"	
22	What was the status of the baby at birth? (Alive or Stillborn)	
23	In case the baby was born alive, is he/she still alive or died within 28 days after his/her birth ? (choose 1=Still alive, 2=neonatal death, 3=died beyond 28 days of age)	
24	Was the deceased referred from a health facility to another health facility or hospital? (Yes/No/Don't know)	
25	If yes, how long did it take to get there? (hours)	
26	Did the deceased receive any medical care or obstetrical/surgical interventions for the condition that led to her death? (Yes/No/Don't know)	
27	If yes, specify where and the treatment received*****	
28	Direct cause of the Maternal Death	
29	Indirect cause of the Maternal Death	
30	Analysis and Interpretation of the information collected so far (investigator's opinion on this death)	
31	Remarks	
32	Maternal death notification date (day/month/year)	
33	Investigator (Title, name and function)	
	***** Treatment received	
	I.V. Fluids; Plasma; Blood Transfusion; Antibiotics; Oxytocin; Anti-seizure drugs; Oxygen; Anti-malarial; Other medical treatment; Surgery; Manual removal of placenta; Manual intra uterine aspiration; Curettage, laparotomy, hysterectomy, instrumental delivery (Forceps;Vacuum), Caesarian section, anaesthesia (general, spinal, epidural , local)	
	Definitions	
	Gravida: The number of times the woman was pregnant**-** Parity**:** Number of times the woman delivered a baby of 28 weeks/500g or more, whether alive or dead	

Appendix 5: Verbal Autopsy form

MINISTRY OF HEALTH

MATERNAL DEATH AUDIT AT COMMUNITY LEVEL (VERBAL AUTOPSY)

CONFIDENTIAL

Code* ……HF ……District ……

GENERAL INSTRUCTIONS

- This form must be completed for all maternal deaths that took place in the community (including indirect deaths, abortions, molar and ectopic gestation) occurring up to 42 days following delivery / termination of pregnancy.
- Community Maternal Death Surveillance and Response Committee comprising of HSA for the area, service provider from the nearest health center, one representative from the Area Development Committee, one representative from the Village Development Committee (VDC), Village Headman and two members of the Village Health Committee from the area where the maternal death has occurred, must complete the form within one month and make a follow up on the implementation of the action plan within 3 months. NB. If a district member is available, he/she could also be part of the team (this form should be filled in triplicates)

- The original form should be kept at the health facility within the catchment area and copies submitted to the District Health Officer who will forward it to the Zonal Health Office and RHD.
- The Safe motherhood Coordinator should compile quarterly reports on all maternal death reviews conducted in the community and submit to DHO and the zone. RHU to receive report from the ZHSO.
- Ask for health passport of the deceased for reference during the discussions

Guiding principles for interview

Discussing the events around a maternal death with family members and friends can be extremely sensitive. Interviewers need to present themselves in an approachable and respectful manner. The process of gathering the information is likely to be upsetting to the relatives of the deceased woman.
The guiding principles for interviewers are as follows:

- The interviewer(s) must be acutely sensitive and respectful for the full duration of the interview.
- The respondent should be reassured that the information collected will treated as confidential.
- An introduction is required which tells the interviewee(s) the purpose of the interview, recognises that it is difficult for them and that their cooperation will help other women not to suffer the same fate.
- Preferably, the interview should be conducted by someone who is a community member but well trained to use the form

On arrival at the respondent's house:

1. Greet and condole the respondent
2. Ask for a private place to sit and talk away from other people
3. Ask the respondent to bring the health passport of the deceased (if available)
4. Engage the respondent in a general discussion e.g.; about the weather, to make them feel relaxed

VERBAL AUTOPSY

Verbal autopsy for maternal deaths is a method of finding out the medical causes of death and ascertaining the personal, family or community factors that may have contributed to the death in women who died outside of a medical facility.

Consent:

My name is _____I am working with the Ministry of Health. We are in the process of implementing Maternal Death Reviews involving communities

I am here today to conduct an interview with you because you are a friend or relative of..... (Deceased name) who died recently during pregnancy, delivery or up to 42 days (6 weeks) after birth. We feel that you are in the best position to be able to tell us more about the events leading up to this woman's death and thus initiate Maternal Death Review process. After this interview the information you give us will be reviewed by the Community Maternal Death Review Team and the Health Facility Maternal Death Review Team and will be reported back to your community. We assure you that any information you provide will be treated with respect and will only be used to assist individuals, communities and health facilities to understand the contributing factors and learn how to prevent maternal deaths in future. The purpose of this is NOT to find fault with any individual or to put blame on the woman, the family, and the community or health staff. The purpose is to give everyone an opportunity to think about how things could be improved in future.

The interview will take approximately 1-hour. Your participation is absolutely voluntary. You may choose not to participate, or withdraw your consent for any reason at any time, without jeopardizing your care by any health worker or at any health facility.
Do you agree to take part in this interview?
Please indicate whether you agree or not by putting your signature or thumbprint in the box next to your decision

Yes ☐ No ☐

Do you agree to provide the health passport and other relevant documents of the deceased? These materials will be returned to you at the end of the MDSR process

Yes ☐ No ☐

If yes, inform the respondent that notes will be taken during the discussion

Name of Interviewer: ----------

Name of HSA: ----------

Name of nearest facility----------

Was this woman followed up by HAS? ….. ***Circle below***

i) During pregnancy 1. Yes 2. No 3. Don't know
ii) After delivery: 1. Yes 2. No 3. Don't know

SECTION 1: BACKGROUND DETAILS OF DECEASED

1.1 Name of deceased woman	
1.2 Age at death	
1.3 Deceased date of birth	
1.4 Marital status	
1.5 Religion	
1.6 Level of education	
1.7 Occupation	
1.8 Husbands occupation	
1.9 Husbands level of education	
1.10 Next of kin	
1.11 Address:	Village: TA:
1.12 Number of Pregnacies	
1.13 Number of Deliveries	
1.14 If she gave birth for the current pregnancy, state place where she delivered: *(i.e. home, TBA, name of health facility)*	
1.15 Date of Delivery	
1.16 Date of death:	
1.17 Place of death: *(i.e. home, TBA, Health Centre, Hospital, on the way, other… specify)*	
1.18 Date of verbal autopsy	

SECTION 2.0 ANTENATAL CARE	
2.1 Did (deceased) ever go for antenatal care during this pregnancy?	☐ Yes: Please ask for and review ANC history from the Health passport and record in the section below accordingly. . If there is no ANC card, ask questions in section 2.2 ☐ No: If she did not receive ANC, skip to question 2.8
2.2 ANC HISTORY a. Blood pressure normal: b. SP received: c. Iron received at last visit: d. Albendazole received: e. Bed net received: f. Tested for HIV: g. HIV status: h. If HIV positive, ART received:	 ☐ Yes ☐ No ☐ don't know ☐ BP not taken ☐ 1 dose ☐ 2 doses ☐ 3 or more doses ☐ Yes ☐ No ☐ don't know ☐ Yes ☐ No ☐ don't know ☐ Yes ☐ No ☐ don't know ☐ Yes ☐ No ☐ don't know ☐ Negative ☐ Positive ☐ don't know ☐ Yes ☐ No ☐ don't know
2.3 At how many months pregnant did she start ANC? (verify in health passport if available)	
2.4 If yes, how many times did she go for antenatal care during this pregnancy? (ask or verify in health passport if available)	☐ 1 time ☐ 2-3 times ☐ 4 times or more
2.5 How many months pregnant was she at her last antenatal visit?	
2.6 If (deceased) went for ANC, where did she go? (*tick the appropriate box and specify the name of institution on the line provided*)	☐ Health centre: _____ ☐ Hospital: _____ ☐ Other: _____
2.7 Whom did she see for antenatal care?	☐ Midwife/Nurse ☐ Doctor, ☐ Medical Assistant ☐ TBA ☐ Other: (specify)_____
2.8 During pregnancy, did she experience any of the following problems:	☐ Convulsions/fits ☐ High fever ☐ Vaginal bleeding (any) ☐ Heavy bleeding with clots from the vagina ☐ chest pains ☐ Blurred vision and severe headache ☐ Draining liquor ☐ Severe abdominal pains ☐ Yellow skin/eyes ☐ Chronic cough ☐ Premature rupture of membranes ☐ Offensive (bad smelling) vaginal discharge ☐ Chronic illness ☐ Swelling of feet, legs, face and hands:

	☐ Paleness ☐ Extremely short of breath ☐ Coughing up blood
2.9 How many months was she pregnant at the time of death?	
2.11 Did the (deceased) have any other problem during her pregnancy that you can tell us about?	☐ Yes ☐ No → skip to Q2.16 ☐ Don't know → skip to Q2.16
2.12 Did she seek medical care?	☐ Yes ☐ No → skip to 2.15 ☐ Don't know
2.13 If yes, was she referred for the problems observed	☐ Yes ☐ No ☐ Don't know
2.14 If yes, did she go to any health facility for follow-up?	☐ Yes (specify:_____) ☐ No ☐ Don't know
2.15 If no, Why did she not go for follow-up to a health facility for her problem? (Probe. The following issues may come up: *not aware how severe the problem was, previously experienced poor attitude by service provider, beliefs and customs, long distance to facility, lack of money for transport, etc.*)	
2.16 Did the pregnancy result in a spontaneous abortion? (i.e. did she lose the pregnancy)	☐ Yes ☐ No → skip to 3.1
2.19 If yes, did she go for care and if so, where did she seek care?	☐ TBA ☐ Health facility ☐ Don't know Others, specify----------
2.20 Why did her family decide to seek care? • Probe: Severe bleeding; high fever; foul smelling vaginal discharge; shock	
2.21 In case of abortion, how was her health following the abortion?	
SECTION 3: ASK THIS SECTION IF DEATH OCCURED DURING LABOUR AND DELIVERY	
3.1 Did she die during labor and delivery?	☐ YES ☐ NO → if no, skip to Section 4.1
3.2 Where did her labour start?	☐ Home ☐ Other: (specify_____)
3.3 Did she take any medicine before or during labour?	☐ Yes (what type? (probe for traditional medicine:_____) ☐ No ☐ Don't know

3.4 Where did she deliver?	☐ Home ☐ Health Facility ☐ TBA ☐ Other (specify_____)
3.5 What was the time and date of delivery?	
3.6 Who conducted the delivery?	☐ Midwife/Nurse/Doctor ☐ Relative/neighbour ☐ TBA ☐ others, specify ----------
3.7 During the process of labour/delivery, did the mother have any problems (probe for the following): ☐ Prolonged labour ☐ Retained placenta ☐ Severe bleeding ☐ High Fever ☐ Severe breathlessness ☐ Edema ☐ Fits ☐ Unconsciousness ☐ Others (specify)	☐ YES→ narrate the response in this box. ☐ NO → skip to Q4.1
3.8 Did she seek medical care?	☐ Yes ☐ No ☐ Don't know
3.9 Was she referred to a next level of care ?	☐ Yes ☐ No →skip to 3.13 ☐ Don't know→ skip to 3.13
3.11 Who was she referred by	☐ HSA ☐ TBA ☐ Traditional Healer ☐ Family Member/Neighbor ☐ Other: specify_____
3.12 What was the time interval between referral and arrival of transportation?	
3.13 If not referred, state reasons: (Probe. The following issues may come up: *not aware how severe the problem was, previously experienced poor attitude by service provider, beliefs and customs, long distance to facility, lack of money for transport, etc.*)	
If the woman died during labour/delivery, skip to Section 5 if died during postnatal period, continue to Section 4.	
SECTION 4: ASK THIS SECTION IF DEATH OCCURRED DURING POSTNATAL PERIOD	
4.1 Where did her labour start?	☐ Home

	☐ Health facility ☐ Other: (specify_____)
4.2 Did she take any medicine before or during labour?	☐ Yes (what type? (probe for traditional medicine:_____ ☐ No ☐ Don't know
4.3 Where did she deliver?	☐ Home ☐ Health facility ☐ Other: (specify_____
4.4 What was the time and date of delivery?	
4.5 Who conducted the delivery?	☐ TBA ☐ Midwife/Nurse/Doctor ☐ TBA ☐ Relative/neighbor ☐ Other: (specify_____)
4.6 During the process of labour/or delivery, did the mother have any problems (probe for the following): ☐ Prolonged labour ☐ Retained placenta ☐ Severe bleeding ☐ High Fever ☐ Severe breathlessness ☐ Edema ☐ Fits ☐ Unconsciousness ☐ Others (specify)	☐ YES→ narrate the response in This box. ☐ NO → skip to Q4.7
4.7 How many days after delivery did she die?	
4.8 Did the deceased go to the health facility for any postnatal check-ups?	☐ Yes (How many days after delivery:_____) ☐ No ☐ Don't Know
4.9 How many days after delivery did she start experiencing problems	
4.10 What were the specific problems that she experienced during postnatal period? Probe for: • Severe bleeding with clots • Chest pains and collapse • High fever • Blurred vision and severe headache • Fits • Foul smelling vaginal discharge • Severe Oedema • Severe paleness • Severe Abdominal pain • Others,--------- specify	(narrate response in this box)

4.11 Did she seek help for this problem?	☐ Yes ☐ No → skip to Q4.13 ☐ Don't Know→ skip to Q 4.13
4.12 Where did she seek help?	☐ Health centre _____ ☐ Hospital_____ ☐ Other (specify)_____
4.13 If she did not seek help, state the reason/s (Probe. The following issues may come up: *not aware how severe the problem was, previously experienced poor attitude* *By service provider, beliefs and customs, long distance to facility, lack of money for transport, etc.*)	
4.14 Is there anything else that happened leading up to her death?	
Section 5: Previous pregnancy and birth history	
5.1 Please tell me about (NAME's) health in the six months before she became pregnant this time *PROMPTS* *Health problems, illnesses, operations, medications*	
5.2 How many times had (NAME) been pregnant in total?	|__|__| 99 = Don't know
5.3 Please tell me about these previous pregnancies *PROMPTS* *Miscarriages, stillbirths, other complications*	
5.4 How many of these pregnancies resulted in a live born baby?	|__|__| 99 = Don't know
5.5 How many of these live born babies are still alive?	|__|__| 99 = Don't know
5.6 In your opinion what do you think was the cause of death?	
5.7 In your opinion, what do you think could be done to prevent the death?	
5.8 Were you present with (the deceased) when she died? If No, Who told you about her death?	
5.9 How is that person related to (the deceased)?	
5.11 Do you have any other comments?	

Thank you so much for your time and responses

6.0 INTERVIEWER'S OBSERVATIONS (To be filled in soon after completing interview)

COMMENTS ON SPECIFIC QUESTIONS:
ANY OTHER COMMENTS:
INTERVIEWERS OBSERVATIONS

7.0 Summary of Contributing Factors

Summary	**Important factor(√)**	
	Avoidable death	**Possibly would have avoided death**
Health facility factors		
Deceased health condition		
Obstetric factors		
Social-cultural factors (e.g. decision making		
Events and circumstances in the community		
Transportation,		
Communication		
Knowledge on danger sign		

8.0 ACTION PLAN MADE DURING THE COMMUNITY FEEDBACK MEETING

	Contributing Factors	*Strategies*	*Action Points*	*Time Frame*	*Responsible Officer*	*Action plan Review date*
Community Level						
Facility Level						
District Level						

9.0 COMMUNITY MDSR TEAM: (List names + function)

1) .....
2) .....
3) .....
4) .....
5) .....
6) .....
7) .....
8) .....
9) .....
10) .....

Date report compiled.....

Report compiled by:.....

Appendix 6: Maternal Death Verbal Autopsy process

Maternal Death Verbal Autopsy process