Evaluation of WHO support to strengthen Maternal Perinatal Death Surveillance and Response (MPDSR) in Nepal

Final Report

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List of Abbreviations

ANC	Antenatal check-up
ANM	Auxiliary Nurse Midwife
ARR	Annual Rate of Reduction
BEONC	Basic Emergency Obstetric and Newborn Care
BHS	Basic Health Services
CCS	Country Cooperation Strategy
CS	Cesarean section
COIA	Commission on Information and Accountability
CPR	Contraceptive Prevalence Rate
EDP	External Development Partner
EOC	Emergency Obstetric Care
FCHV	Female Community Health Volunteer
FHD	Family Health Division
FP	Family Planning
FWD	Family Welfare Division
FY	Fiscal Year
GDP	Gross Domestic Product
GoN	Government of Nepal
HMIS	Health Management Information System
HR	Human resource
ICD-MM	International Classification of Diseases- Maternal Mortality
ICD-PM	International Classification of Diseases- Perinatal Mortality
KPI	Key Performance Indicator
LMIC	Low- and Middle- Income Country
MD	Management Division
MDG	Millennium Development Goals
MDR	Maternal Death Review
MIRA	Mother and Infant Research Action
MIS	Management Information System
MMMS	Maternal Mortality and Morbidity Survey
MMR	Maternal Mortality Rate/ Ratio
MNCH	Maternal Neonatal and Child Health
MoHP	Ministry of Health and Population
MPDR	Maternal and Perinatal Death Review
MPDSR	Maternal and Perinatal Death Surveillance and Response
MSS	Minimum Service Standard
NDHS:	Nepal Demographic and Health Survey
NeNAP	Nepal's Every Newborn Action Plan
NESOG	Nepalese Society of Obstetrics and Gynecology
NFHS	Nepal Family Health Survey
NICU	Neonatal Intensive Care Unit

NHSSP	Nepal Health Sector Support Program
NMICS	Nepal Multiple Indicators Cluster Survey
NMR	Neonatal Mortality Rate
NND	Neonatal death
PDR	Perinatal Death Review
PHCC	Primary Health Care Center
PMR	Perinatal Mortality Rate
RAFD	Reproductive Age Female Death
RMNCAH	Reproductive Maternal Newborn Child and Adolescent Health
SEARO	South-East Asia Regional Office
SMPoA	Safe Motherhood Plan of Action
SNCU	Special Newborn Care Unit
SSBH	Strengthening System for Better Health
TFR	Total Fertility Rate
TWG	Technical Working Group
UHC	Universal Health Coverage
UKAID	United Kingdom Agency for International Development
UNFPA	United Nations Population Fund
UNICEF	United Nations International Children's Emergency Fund
USAID	United Nations Children’s Fund
VA	Verbal Autopsy
WCO	WHO Country Office
WHO	World Health Organization

EXECUTIVE SUMMARY

Every year, around 295,000 women die from causes related to pregnancy, childbirth and postnatal period. With the number of stillborn babies reaching 2 million per annum, 2.4 million newborns succumbing in the first month of life, most of these maternal and perinatal deaths are preventable. Maternal and Perinatal Death Surveillance and Response (MPDSR) is an evidence-based best practice advocated by the World Health Organization (WHO) in the reduction of maternal and perinatal deaths. MPDSR represents a continuous action cycle of identification, notification and review of maternal and perinatal deaths followed by meaningful interpretation of review findings, response and action.

The WHO continues to guide, technically support and finance countries in adopting MPDSR.
In 2004, the World Health Organization (WHO) advocated for all countries to establish maternal death surveillance systems to help reduce maternal deaths in a landmark publication titled Beyond the Numbers. In the context of Nepal, the 2015 constitution affirmed the right to safe motherhood and reproductive health services. Maternal, reproductive, and new-born health services are all regarded as fundamental human rights under the Right to Safe Motherhood and Reproductive Health Act, 2018 and its Regulation, which took effect in 2020.
The review of maternal deaths started in Nepal in the early nineties from the Maternity hospital in 1990 and gradually expanded to include perinatal deaths and maternal death reviews in community as well. In 2015, the MPDSR modality was restructured with updated guidelines and case formats.

As of May 2022, the facility based MPDSR is implemented in 94 hospitals and community MPDSR is implemented in 27 districts in Nepal. At present, WHO Nepal in collaboration with UNICEF and NHSSP has been providing support to carry out various activities in MPDSR implementation, especially orientations, training, review workshops, onsite coaching and online reporting. It is high time for Nepal country teams and the WHO to identify factors that have influenced the uptake and sustainability of implementing MPDSR systems to improve the quality of care and prevent future deaths.

The evaluation was conducted by two consultants, one each from international and national levels recruited by the WCO. Initially, preparatory work was carried out in the form of orientation to the consultants, followed by the formulation and refining of the evaluation questions and designing of necessary tools (KII guidelines, checklists) to conduct the interview. A detailed literature review was conducted, and the evaluation process and tools were refined. Interviews with the key informants were conducted either via in-person visits or video conferences. Site visits were carried out and the MPDSR systems in different provider institutions were observed. An analysis of the findings was done, and a consensus was obtained through a consultation process. The final evaluation report was prepared based on the feedback.

This evaluation report highlights the background, objectives, methods and approaches, findings and way forward to sustain and continue the WHO supported MPDSR program in Nepal. This evaluation primarily aimed to assess the contribution, appropriateness and relevancy of WHO support provided to strengthen MPDSR and recommend strategic approaches to be followed in the future.

Findings and conclusions

With more than 32 years of history and efforts since 1990, Nepal has reached several achievements targeting a fully established MPDSR mechanism in the country. Several maternal mortality studies and estimations have made available reasonably accurate mortality indices. Almost all key elements of MPDSR eg. Formation and functioning of MPDSR committees, case identification and Notification, review process and determination of cause of death, periodic analysis of data & dissemination and formulation of recommendation & implementing actions have been introduced. The establishment and quality of the MPDSR modality varies from central, facility and provincial levels significantly. With facility based and community-based arms Nepal's MPDSR is slowly maturing. Several rounds of restructuring have allowed the system to develop into its current status. The system is yet to be a fully-institutionalized MPDSR system identifying all deaths in facilities and communities.

MPDSR in Nepal was started as a project mode of WHO and later streamlined as a government initiative. Commitment from political and advocacy levels is very high in all levels of federal structure. A sustained political and policy level commitment is not readily phenomenal as reflected in ownership, lack of enabling policies, inadequate human and financial resources, underperforming TWG and diluted central level authority in the process. WHO has significantly financed the program. The GoN has also started funding MPDSR process. Availability of adequate and sustained funds for the MPDSR is not evident both from GoN, WHO and other partners.

At present Nepal has a MDSR system with all the elements advocated by WHO encompassing six steps of the mortality audit cycle (Identify, collect information / notify, analyze information, recommend solutions, implement recommendations, evaluate and refine). Many of the focal points of MPDSR at the facility and community level show satisfactory enthusiasm and commitment to execute the mechanism even with varied levels of capacity. The capacity of related personnel in six steps of the maternal mortality cycle seems to be satisfactory. The majority of participating facilities notify maternal deaths. Comparatively, notification is far below from the community. Non-existence of specific regulations on the need for mandatory notification of maternal (and perinatal) deaths has diluted accountability and identification of maternal and perinatal deaths. Use of ICD-MM and ICD-PM is appreciative, but it is not optimal. Many facilities document the proceedings of the case reviews and translate lessons learnt at the case reviews into practice change.

Key responsible professional organizations, especially NESOG and PESON, have engaged in the MPDSR development and implementation. Constructive support is shown by professional

colleges and other developmental partners. Their involvement at the national and especially sub-national level is not satisfactory.

At present an organized system of MPDSR training at Central and Provincial levels led by FWD and supported by WHO is in place. The MPDSR training package includes the elements: maternal mortality, case practices, roles and responsibilities of committees, Cause of Death assignment (ICD – MM and ICD – PM) and response mechanisms in line with six steps of the maternal mortality audit cycle.

National Guidelines on MPDSR are available including MPDSR committee establishment, function and defining roles and responsibilities of members of MPDSR committees at various levels. The functionality of the national MPDSR committee remains unclear. Objective information on active MPDSR committees, number of health facilities or districts actively implementing the MPDSR process are not readily available. The restructuring and quality improvements of the MPDSR process have not been sufficient enough for all the spectrum of stakeholders to perceive a benefit.

Hospital level management of cases seems to be based on norms of each facility and based on individual expertise and experience. Standard guidelines in the management of maternal and neonatal cases are not readily available or practiced. This has diluted the requisite for evidence-based practice and the case review process. As such, a comparison of case management against national standards has not been perceived by officials involved in MPDSR. This has impeded the objective case review and ensuring the quality of care in the formulated actions and response mechanism.

Both individual maternal and monthly perinatal death reviews are conducted at facility level in a presumed cordial atmosphere. Although there has been blame culture at the initial phases, at present it has not been a threat to the case discussion and review. Concerns are raised by professional organizations on confidentiality, anonymity and possible punitive actions out of MPDSR. Presently supportive legal provisions are non-existent to cater to this need.

A tedious and exhaustive data monitoring of MPDSR at central level (at Family Welfare Division) is being undertaken. Several periodic data analysis reports are available, and they have been disseminated. A data triangulation mechanism for maternal or perinatal deaths is not executed. Suboptimal processes for data analysis, and poor flow of data from district to national level have affected the quality and quantity of information available for analysis and recommendations. MPDSR mechanism has failed to produce nationally-representative mortality indices.

MPDSR has led to a number of hospitals to revise their management protocols and several mortality preventive strategies. Many facilities document the proceedings of the case reviews and translate lessons learnt at the case reviews into practice change. Planning for implementation and monitoring of responses and challenges are not observed. A methodical response mechanism with identification of deficiencies, SMART formulation of

recommendations and dissemination of actions worked out for responsible officials do not take place. MPDSR is not currently linked with quality of care improvement initiatives and two systems function vertically. The outcome of the MPDSR reviews conducted at district or facility levels are not effectively communicated to the central level (Family Welfare Division or Professional Colleges).

The focus on PDSR by all key players is insufficient and unacceptably lagging behind.

Nepal was severely affected due to direct and indirect effects of COVID-19 on morbidity and mortality. Even with its limited capacity to respond effectively, the country employed various preventive and control measures to prevent maternal morbidity and mortality due to COVID-19 partly contributed by WHO. A number of changes were adopted in maternal care service provision and context-specific revision of MPDSR was done during the pandemic.

Nepal adopted a transition to a federal democratic form of government in 2015. This made the country a federal democratic republic with three tiers of government – local, provincial and federal with 753 local levels (Palikas), seven provincial governments, and one federal government. This transition resulted in the challenges of jurisdictional overlap among the three tiers of government, lack of clarity and coherence between policies and devolved powers, reducing duplication of efforts, and creating government capacity. A number of challenges were also faced in executing MPDSR following the federalization.

WHO's contribution is reflected in almost all achievements in the current status of MPDSR. All three levels (HQ / SEARO / WCO) of WHO are working synchronously in the country. WHO has played a pioneering and catalytic role by demonstrating normative functions of WHO in putting MPDSR into action and sustaining the same. The multifaceted involvement of WHO has immensely contributed to the maturation and reshaping of the system throughout its evolution. MPDSR has assumed a key area of WCO and WHO SEARO agenda. WHO has been extensively engaged in sensitizing the government, developing guidelines, MPDSR training, progress reviews, central level monitoring and mobilizing other partners. The SEARO contribution to MPDSR training, regional level country progress reviews and use of MDSR as a KPI to monitor implementation are remarkable. Capacity building of the entire spectrum of players on MPDSR by different models of training at strategic points of maturation of the program with the support from SEARO is significant. Systems strengthening and linking findings in the decision-making process facilitated by WHO improved MPDSR in Nepal. The technical support has aligned with WHO guidelines and almost all steps of MPDSR such as identification of deaths, review process, ascertainment of cause of death using ICD MM/PM classifications, pregnancy checkbox in death declaration form and use of MCCD in verbal autopsy were in line with WHO specifications. The support has improved and impacted several maternal death surveillance attributes including representativeness, data quality, acceptability, sensitivity etc. The evidence indirectly suggests that WHO support may have contributed to the reduction of MMR, SBR and NNMR.

WHO has provided both financial and technical support throughout its evolvement and continued satisfactorily. Considering the multiple areas identified for further improvements in MPDSR, it could be speculated that WHO could have played a more rigorous and active role when the expected performance and outcomes were not achieved. Considering the high-level prominence given to MPDSR at global, regional and country level, monitoring of MPDSR activities by WHO could have been more objective. Even though the MPDSR was not producing results as expected, there was no trigger noted by SEARO that warranted feedback or regional level intervention. WHO's monitoring / response systems seem to be not sensitive enough to capture activity level outcomes from the country level.

Recommendations

Findings of this evaluation call for an aggregated response from all the stakeholders. Several changes are suggested to be made to the existing MPDSR modality and strategy to ensure that future interventions on MPDSR are based on comparative advantages, tailored to the country needs, effective and efforts are sustained in the evolving contextual circumstances in the country.

Political and Policy Level

A prerequisite for an effective MPDSR system is a well-informed stakeholder community.

- It is crucial to execute an awareness strategy and advocacy on the need and advantages of MPDSR from policy to the ground level encompassing the entire spectrum of key players. Sustained political and policy level commitment should be ensured.
- Government support with enabling policies, adequate human and financial resources, and stakeholder participation are crucial for buy-in at national and sub-national levels.
- Shifting the ownership of the program to the government counterparts (FWD) will be a key step. A policy dialogue with federal, provincial and local level governments should be initiated to transfer the ownership of MPDSR. An implementation framework for the MPDSR programme that is owned by Federal, Provincial and Local Governments should be prepared.
- Strong government ownership, commitment and involvement should facilitate financing, administrative support and central level authority on the process. The quantity, approach and modalities of support have to be aligned in federated governance structure, reaching up to provincial and local level entities.
- The existing national TWG on MPDSR should be transformed to be a more authoritative and dynamic governing body overseeing the entire MPDSR process with a strong TOR.
- Government should provide adequate and sustained funds for the MPDSR as a high priority area. Responsible agencies could be informed to use MPDSR data to target government budget allocations and revise key performance indicators.
- Though substantial financial support could be received from GoN, WHO should mobilize more funding for the sustenance of MPDSR.
- Legal provisions for mandatory notification of maternal (and perinatal) deaths should be facilitated and at the same time adherence to the same by all relevant officials and

institutions should be ensured. This will create a binding attitude and will lead to a cascade of influence for the other steps of the MPDSR cycle.

MPDSR Process

Revisiting and restructuring of the existing MPDSR process is an urgency for reducing maternal and perinatal mortality in the background of stagnant mortality indices and federalization. The experience gained out of the RH subcluster during the Covid19 pandemic showed that counting and learning from maternal deaths are doable in Nepal. Following the same principles and strategies, a phased approach targeting a fully institutionalized MPDSR system should be worked out;

- Identifying all deaths in facilities and communities and producing nationally-representative mortality indices including zero reporting.
- Mandatory notification of maternal (and perinatal) deaths should be enforced to ensure adherence to the same by all relevant officials and institutions.
- The response mechanisms (Immediate, Intermediate and long term) should be strengthened starting from hospital / community level up to the policy level. The MPDSR should generate SMART recommendations and need to monitor frequently.
- Data monitoring at central, provincial and district levels needs to be strengthened. Accountability should be introduced with new regulations for data generation and data dissemination to the next levels. Various existing opportunities and platforms can be capitalized for further reshaping MPDSR in the country.
- Also, triangulating maternal and perinatal mortality data from different sources will help to improve the data quality.
- Actions should be taken to revive the PDSR in its entirety with a special focus and facilitate UNICEF to lead in the subject area.

Professional Groups

For a well-functioning MPDSR system, the support of professional organizations is indispensable. Key professional organizations should be convinced of the need for their strong engagement in the MPDSR process.

- Technical capacities, knowledge and enthusiasm of them should be augmented involving both national and sub-national obstetric, paediatric and perinatal societies.
- Health professionals should be facilitated to participate in MPDSR activities at facility level as part of professional development. It is crucial to update and monitor the adherence to the national reproductive clinical guidelines / protocols in both public and private health institutions.
- Innovative mechanisms should be introduced for health professionals to act on case review findings and actions to improve quality of care at facility level.
- Parallelly, it is essential to facilitate creating adequate legal frameworks to prevent punitive action out of MPDSR. A non-threatening environment should be established for a more productive case discussion and to avoid a blame culture.

Human Resources

The lack of and rapidly changing human resources at both national and sub-national levels was a challenge. Capacity in conducting MPDSR needs improvement.

- More structured MPDSR training packages addressing weak areas strongly and in align with federalization should be introduced based on global and regional packages. The generic modules of MPDSR may not address weak areas of six-step maternal mortality audit cycle in Nepal.
- Refresher training at key facilities for newcomers and already trained healthcare personnel should be done.
- It is important to incorporate MPDSR activities in job functions and emphasize all the spectrum of stakeholders the benefits of MPDSR for quality of care improvement and as a mechanism to achieve better patient outcomes.
- Allocation of a dedicated person from FWD to MPDSR will add authority to the process and also reflects the government ownership. Provincial MPDSR committees should be activated with the support of provincial governments and dedicated development partners assigned to each province.

Stake of WHO

The lead role of WHO is crucial in both technical leadership and financial support to sustain and scale up MPDSR. WHO inevitably needs to sustain the current stake and play a more rigorous and catalytic role to involve all categories of players (including the government and other developmental partners at national and provincial levels) into mainstreaming of MPDSR in government health system.

Several reforms at WHO level are also recommended.

- A revisit of the previous biennium work plans should be done to objectively evaluate the end result of WHO support for MPDSR. More funding specifically for MPDSR should be allocated. There is a need to explore the possibilities to introduce performance-linked disbursement of funds.
- A roadmap on institutionalization of MPDSR signifying milestones that should be achieved both by GoN and WHO should be developed with a target of shifting the present WHO role to the government.
- Motivation of key players including the government and professional groups at national and provincial levels is a priority. It is important to undertake a stakeholder mapping for MPDSR. Harmonized actions with other developmental partners, especially UN agencies: WHO, UNICEF, UNFPA, World Bank, UNAIDS and UN WOMEN, should be considered to delegate implementation elements of MPDSR process.
- WHO should continue to provide technical support and build capacity on MPDSR of personnels at all levels.
- It is high time to revisit WHO's monitoring and evaluation mechanisms. Separate independent external audits and evaluations of WHO activities at each level should be introduced. Introducing more mechanisms and indicators sensitive enough to capture underperforming country level activities at regional level should be explored.

1. Introduction

The status of two lives in one body confers a pregnant woman to be considered the precious life in any civilized society. However, nearly 295,000 women die each year from causes related to pregnancy, childbirth and postnatal period (1). An estimated 2 million babies are stillborn every year (2). Around 2.4 million newborns die in the first month of life (3). Many of these maternal and perinatal deaths are preventable. As such, the prevention of maternal and perinatal deaths has assumed a high priority in the global health agenda.

In 2004, the World Health Organization (WHO) advocated for all countries to establish maternal death surveillance systems to help reduce maternal deaths in a landmark publication titled Beyond the Numbers (4). A high-level Commission on Information and Accountability (COIA) for Women's and Children's Health was established in 2011 to improve global oversight and accountability for Women's and Children's Health following the launch of the Global Strategy for Women's and Children's Health in September 2010 (5).

A key strategy for improving maternal and newborn survival is understanding the number, causes and circumstances of such deaths. Maternal and Perinatal Death Surveillance and Response (MPDSR) is an evidence-based best practice advocated by the World Health Organization (WHO) in the reduction of such deaths (4). MPDSR can improve maternal and perinatal care which is essential to achieving Universal Health Coverage (UHC). MPDSR represents a continuous action cycle of identification, notification and review of maternal and perinatal deaths followed by meaningful interpretation of review findings, response and action (6) (Figure - 1).

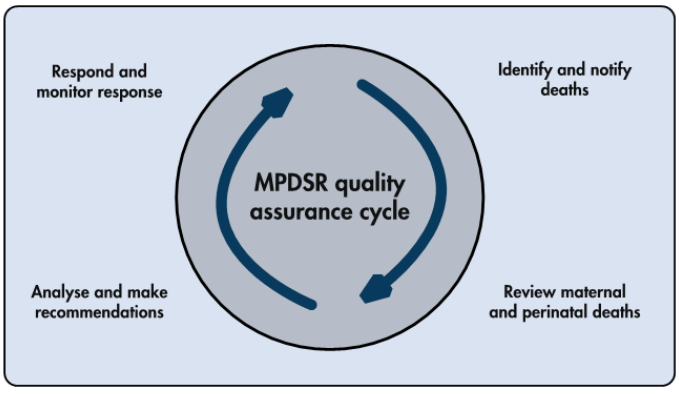

Figure 1 : MPDSR action cycle

The MPDSR functions at multiple levels of the health system to capture information on the number of causes of deaths and to undertake systematic, critical analysis of the care received(8). As such, the MPDSR is evidence-based high impact strategy for reducing maternal and perinatal mortality. The MPDSR has been recommended by the World Health Organization (WHO) and implemented in many low-and-middle income countries (7, 8). The MPDSR has been incorporated into technical guidance for maternal and perinatal deaths released in 2013

and 2016 respectively (7). In 2020, WHO listed MPDSR among the essential interventions to mitigate the indirect effects of COVID-19 on maternal and perinatal outcomes (9). The objective of the MPDSR program is to eliminate preventable maternal and perinatal mortalities by obtaining and using the information on each maternal and perinatal death to guide public health actions and monitor their impact (10).

WHO continues to guide, technically support and finance countries in adopting MPDSR. WHO has also published several documents to help countries to implement MPDSR. In 2012, WHO published updated technical guidance on Maternal Death Surveillance and Response (MDSR) again, addressing the importance of the process. In 2012, the WHO introduced a coding classification for maternal deaths: The WHO Application of ICD-10 to Deaths during Pregnancy, Childbirth and the Puerperium (ICD-MM) (12). WHO's tools for review of perinatal deaths were published in 2016 (13). Many countries have integrated the review of stillbirths and neonatal deaths into MDSR systems transforming the process as MPDSR. A significant number of countries are in the process of implementing MPDSR. WHO in 2021 has produced implementation tools that were pretested in several low- and middle-income countries (LMIC) to provide direction for countries conducting MPDSR (14).

Despite continued advocacy and support for MDSR approach at the global, regional and country levels by WHO, there is limited information on the adoption and implementation of the modality by countries. In 2015, WHO and UNFPA conducted a Global MDSR implementation survey among all low- and middle-income countries to assess the global implementation of MDSR. The report, Time to Respond: a Report on the Global Implementation of Maternal Death Surveillance and Response (15), indicates that of 67 countries surveyed 86% had a national policy to notify all maternal deaths, 85% had a national policy to review all maternal deaths, 76% had a national maternal death review committee in place, 65% had subnational maternal death review committees in place, and 60% had both national and subnational committees, but only 46% had national maternal death review committees that met at least biannually. Significant barriers to implementation were identified at national, sub-national and facility levels. This emphasizes that the immediate challenge for global MDSR advocacy and implementation is the need for countries to follow through on their policy commitments and "complete the loop" in the surveillance-response cycle.

Country Profile of Nepal

Nepal is a Federal Democratic Republic State situated in South Asia. It is the Land of Mount Everest, the highest peak of the world and the birthplace of Lord Buddha, Lumbini. Nepal occupies 0.03% and 0.3% land of the world and the Asia respectively. It has diverse topography and climate. It stretches from east to west with an average length of 885 kilometers and widens from north to south with an average breadth of 193 kilometers. In total with the newly included 335 sq km. Nepal has 141516 sq km. of area (according to newly issued map). Topographically, Nepal is divided into three distinct ecological zones: These are the mountain, hill and terai (plains).

The mountain zone, ranges in the altitude from 4,877 meters to 8,848 meters above sea level and covers a land area of 51,817 square kilometers and only about 7 percent of the total population lives here. In contrast, the hill ecological zone, which ranges in altitude from 610 meters to 4,876 meters above sea level, is densely populated. About 44 percent of the total population lives in the hill zone, this covers an area of 61,345 square kilometers. Unlike the mountain and hill, the terai zone is the southern part of the country can be regarded as an extension of the relatively flat Gangetic plains of alluvial soil. The terai consists of dense forest area, national parks, wildlife reserves, and conservation area. This area, which covers 34,019 square kilometers, is the most fertile part of the country and 49 percent of the population lives here.

According to Nepal's 2015 Constitution, Nepal is declared as the Federal Democratic Republic country. There are seven provinces and 753 municipalities in this Federal Democratic Republic state. All of these 753 local levels are also broken down into 460 Rural Municipalities, 276 Municipalities, 11 Sub-Metropolitan and 6 Metropolitan Cities. Nepal is also divided in 77 administrative districts with addition of 2 new districts in the new federated structure (17).
According to the preliminary results of the decennial National Census 2021 (18), Nepal's population is 29,192,480, with 14,901,169 women making up 51.04 percent of the population and 14291311 men making up 48.96 percent. The annual population growth rate is 0.93%. There are 198 individuals per square kilometer and 95.91 out of every 100 persons are female. 63.19% of the population resides in cities, according to the 2021 National Census (18).

Nepal is a multi-ethnic, multilingual nation with a wide range of customs and cultures (17).
According to the CBS 2011, the population of Nepal is composed of different ethnicities in different geographical topographies. Chettri 16.6%, Brahman-Hill 12.2%, Magar 7.1% are the major casts who reside in the Hills of the country. Rest of the casts; Tharu 6.6%, Tamang 5.8%, Newar 5%, Kami 4.8%, Muslim 4.4%, Yadav 4%, Rai 2.3%, Gurung 2%, Damai/Dholii 1.8%, Thakuri 1.6%, Limbu 1.5%, Sarki 1.4%, Teli 1.4%, Chamar/Harijan/Ram 1.3%, Koiri/Kushwaha 1.2%, other 19% are the resident ethnicities in rest of the topographical region (16).

In the health care context of Nepal in FY 2077/78, 189 Primary Health Care Centers (PHCCs), 201 public hospitals, 2082 non-public health facilities, and 3794 health posts served as the primary providers of basic healthcare services (BHS) (19). According to the Nepal Multiple Indicators Cluster Survey (NMICS,2019), Infant Mortality Rate (IMR) and Under five (U5) mortality rate are 5 and 28 respectively (CBS 2019) (19). Nepal Demographic and Health Survey 2022 (20) has reported the Total Fertility Rate (TFR) of 2.1 per woman, the Contraceptive Prevalence Rate (CPR) and the users of modern methods out of total CPR are respectively, 57% and 43%.

The latest Maternal mortality rate of Nepal is 174 (Lower UI: 125, Upper: 276) (per 100000 live births) according to the recently released UNMMEIG MMR Estimates (21). The Maternal mortality rate according to Maternal Mortality Study 2021 conducted post Population and House linked MMS is 151 per 100,000 live births (22)and the Newborn Mortality Rate (NMR) as reported by National Demographic Health Survey (NDHS) 2022 is 21 per 1000 live births (20),

which has remained unchanged since NDHS 2016. Women reported obtaining prenatal care from trained professionals 94% of the time. A proportion of 81% of them had at least four antenatal check-ups (ANC), and 96% of the women took supplements including iron. Nearly 80% of deliveries were delivered by skilled providers, while 79% of births overall took place in medical facilities. Within two days of delivery, 70% of women among all deliveries had a postnatal checkup (20).

Health care delivery system of Nepal

According to Nepal's 2015 constitution, the country should be a federal democratic republic with a single federal government, seven provincial governments, and 753 local governments. The Federal level is in charge of formulating policy and laws, establishing quality and standard requirements, specialized health services, research and development, coordination, Monitoring and Evaluation (M&E), and building capacity. The local government is responsible for the Basic Health Services (BHS), together with the management of infrastructure, Human Resource (HR) ,equipment, medications and health facilities that house lesser than 15 beds (Health Posts, Primary Health Care Centers, Basic Hospitals).The local level government bodies are currently engaged in the process of establishing 15 bedded hospital at each municipal unit , that will also function as Basic Emergency Obstetrics and Newborn Care (BEONC) site (16).

Except for six hospitals that are under federal jurisdiction, all of the other existing regional hospitals are under the control of the provincial government. Medical colleges and specialty hospitals fall under federal jurisdiction. In the long run, each of the seven provinces will have at least one government medical college. In FY 2077/78, 201 public hospitals, 2082 non-public health facilities, 189 Primary Health Care Centers (PHCCs), and 3794 health posts served as the primary providers of basic health services (BHS) (18). Despite the increase in institutional deliveries, service quality in the hospital sector has so far not improved, and government tertiary-level hospitals' maternity units were overcrowded, thereby compromising the quality of services (18).

As mandated by the constitution, Nepal has made tremendous strides in expanding access to and coverage of both general and specialty medical services. Because of the following categories of hurdles, there is still a long way to go when it comes to accessibility and use of high quality services (16).

Dimensions and Barriers to Accessing High-quality Health Services

In order to cater and access high quality health services, both demand and supply sides are facing barriers and hurdles which need to be addressed timely for achieving universal goals. In the supply side, geographical inaccessibility expressed in terms of service location and faultily designed health facilities, difficult terrain, costly and scarce transportation are some of the challenges. There are issues with the availability, affordability and accessibility to the health services in both the demand and supply sides. The GoN consider it seriously and plans strategically to mitigate these difficulties and challenges with the goal of providing quality maternal and child health care services in the days to come.

Maternal & Child Health Service Delivery

Maternal mortality was brought to the world's attention in 1987 at the Safe Motherhood Conference in Nairobi, Kenya, and it has remained there ever since. The goal of MDG-5 was to enhance maternal health with a 2015 deadline to reduce the maternal mortality ratio (MMR) by 75 percent from its level in 1990. A nationwide Safe Motherhood Plan of Action (SMPoA) was created by the Government of Nepal (GoN) in 1994 as part of their commitment to accomplishing this objective (16). Since that time, Nepal has made safe motherhood a major priority.

In 2006, the government created and approved a Skilled Birth Attendant Policy, which put into practice two crucial strategies to enhance maternal health: establishing health facilities with emergency obstetric care services that are accessible every day of the year and making skilled birth attendants available (18). The program also placed a focus on improving the technical abilities of healthcare professionals at all levels and increasing referral services for emergency obstetric care (16). This included strengthening family planning services and maternity care at all levels of the health care delivery system.

The 2015 constitution of Nepal affirmed the right to safe motherhood and reproductive health services (18). Maternal, reproductive, and new-born health services are all regarded as fundamental human rights under the Right to Safe Motherhood and Reproductive Health Act, 2018, and its Regulation, which took effect in 2020. Additionally, the Public Health Service Act of 2018 and its regulation 2020 regard safe motherhood and infant health services as fundamental medical services (16). Nepal has also established many policies, strategies, programs, and developed a number of regulations to make sure that high-quality services are provided to everyone, especially the unreached population.

Nepal’s key milestones of developments of Safe motherhood and Newborn health services delivery with regard to key policies, strategies and programs for maternal and newborn health and their implementation show a remarkable progression.

Nepal began developing significant policies guiding programmes for safe motherhood and improved newborn health several decades ago. In the early 1960s, the country took an integrated approach to community health and Family Planning (FP) programmes that led the way for safer motherhood.

The Safe Motherhood and Newborn Health Roadmap, 2030 was formulated by the Family Welfare Division (FWD) and endorsed by Ministry of Health and Population (MOHP), with the intention of ensuring the wellness and a healthy life for all mothers and babies. Safe Motherhood and Newborn Health program aims to address three evidence-based delays that are responsible for maternal and new-born morbidity and mortality in Nepal which are (18); Delays in seeking care, Delay in reaching care and Delay in receiving care. The roadmap also envisaged the increased availability of high-quality maternal and new-born health services leaving no one behind with the expected result of;

- o Increased the demand for and utilization of equitable maternal and new-born health services.
- o Improved governance and ensured accountability of maternal and new-born health services.
- o Improved monitoring and evaluation of maternal and new-born health services.
- o Strengthened emergency preparedness of maternal and new-born health services.

Although the Nepal government and its partners in safe motherhood have made considerable contributions over a number of years, there are still significant supply-side and demand-side impediments for women who need to access maternal health care:

- ☐ Demand Side Barriers -lack of understanding, culture of silence, family and social restriction, tradition beliefs and practices, too shy or ashamed to seek care, distance to health facilities and lack of transport, cost of health care,
- ☐ Supply Side Barriers -availability of services and referral, quality of facilities, availability of drugs and suppliers, availability and ability of staff, staff attitude

The Road Map provides the framework around which Nepal can realize its commitments to MNH, as outlined in the GoN's 2018 Safe Motherhood and Reproductive Health Act. The Road Map is aligned with NHSS 2015– 20203, the Family Planning Costed Implementation Plan (2015–2020) and Nepal's Every Newborn Action Plan (NeNAP 2016–2035) (23).

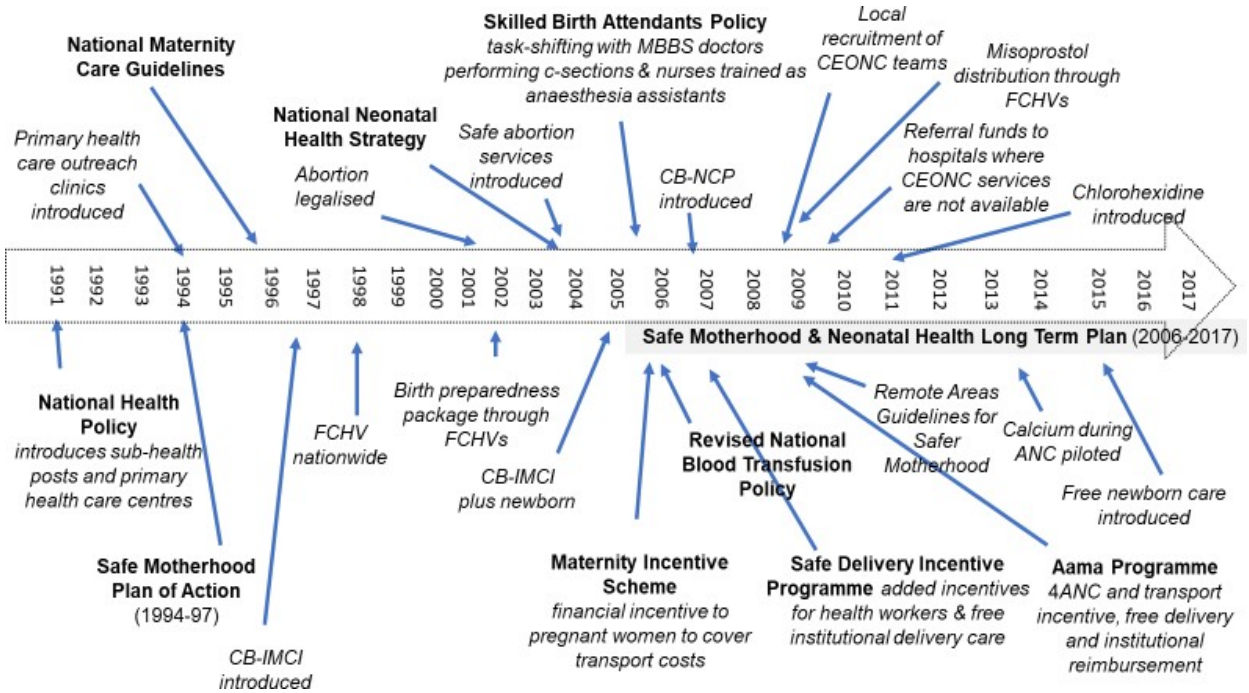

Figure – 2

Key policies, strategies and programs for maternal and newborn health and their implementation.

Source: Central Bureau of Statistics, National population census, 2011.

Notes: 4ANC = Four Antenatal Care Visits; CB-IMCI = Community-based Integrated Management of Childhood Illness; CB-NCP = Community-based Newborn Care Programme; CEONC = Comprehensive Emergency Obstetric Care; C-sections = Caesarean sections; FCHV = Female Community Health Volunteer

Maternal Perinatal Death Surveillance and Response (MPDSR)

A key strategy for improving maternal and newborn survival is understanding the number, causes and circumstances of such deaths. Maternal and Perinatal Death Surveillance and Response (MPDSR) is an evidence-based best practice advocated by the World Health Organization (WHO) in the reduction of such deaths (4). MPDSR can improve maternal and perinatal care which is essential to achieving Universal Health Coverage (UHC). MPDSR represents a continuous action cycle of identification, notification and review of maternal and perinatal deaths followed by meaningful interpretation of review findings, response and action. The MPDSR functions at multiple levels of the health system to capture information on the number of causes of deaths and to undertake systematic, critical analysis of the care received(8). As such, the MPDSR is evidence-based high impact strategy for reducing maternal and perinatal mortality, so it has been recommended by the World Health Organization (WHO) and implemented in many low-and-middle income countries (7, 8). The MPDSR has been incorporated into technical guidance for maternal and perinatal deaths released in 2013 and 2016 respectively (7). In 2020, WHO listed MPDSR among the essential interventions to mitigate the indirect effects of COVID-19 on maternal and perinatal outcomes (9). The objective of the MPDSR program is to eliminate preventable maternal and perinatal mortalities by obtaining and using the information on each maternal and perinatal death to guide public health actions and monitor their impact (10).

WHO continues to guide, technically support and finance countries in adopting MPDSR and has also published several documents to help countries to implement MPDSR. In 2012, the WHO introduced a coding classification for maternal deaths: The WHO Application of ICD-10 to Deaths during Pregnancy, Childbirth and the Puerperium (ICD-MM) (12). WHO's tools for review of perinatal deaths were published in 2016 (13). Many countries have integrated the review of stillbirths and neonatal deaths into MDSR systems transforming the process as MPDSR. A significant number of countries are in the process of implementing MPDSR. WHO in 2021 has produced implementation tools which were pretested in several low- and middle-income countries (LMIC) to provide direction for countries conducting MPDSR (14).

Despite continued advocacy and support for MDSR approach at the global, regional and country levels by WHO, there is limited information on the adoption and implementation of the modality by countries. In 2015, WHO and UNFPA conducted a Global MDSR implementation survey among all low- and middle-income countries to assess the global implementation of MDSR. The report, Time to Respond: a Report on the Global Implementation of Maternal Death Surveillance and Response (15), indicates that of 67 countries surveyed 86% had a national policy to notify all maternal deaths, 85% had a national policy to review all maternal deaths,76% had a national maternal death review committee in place, 65% had subnational maternal death review committees in place, and 60% had both national and subnational

committees, but only 46% had national maternal death review committees that met at least biannually. Significant barriers to implementation were identified at national, sub-national and facility levels. This emphasizes that the immediate challenge for global MDSR advocacy and implementation is the need for countries to follow through on their policy commitments and "complete the loop" in the surveillance-response cycle.

Nepal has made impressive progress in reducing maternal and perinatal mortality. The review of maternal deaths started in Nepal in the early nineties in a limited number of hospitals with the technical and financial support from WHO (24). A maternal death review process was started from Maternity hospital in 1990 and gradually expanded to include perinatal deaths and maternal death reviews in community as well (25). It was scaled up as MPDSR in several districts across the country capturing deaths that occurred in the communities as well.

In 2015, the MPDSR modality was restructured with updated guidelines and case formats. Since then the Family Welfare Division (FWD) has been implementing the MPDSR in certain hospitals and communities in Nepal with the technical and financial support from WHO and other partners (24). Built on the WHO's technical guidance and capacity building at various levels, the country's MPDSR improved significantly. At SEARO level, MDSR is considered as a Key Performance Indicator (KPI). SEARO also supported virtual MPDSR training and developed a pool of facilitators to scaleup MPDSR at country level. As of May 2022, the facility based MPDSR is implemented in 94 hospitals and community MPDSR is implemented in 27 districts in Nepal (25). At present, WHO Nepal in collaboration with UNICEF and NHSSP has been providing support to carry out various activities in MPDSR implementation, especially orientations, training, review workshops, onsite coaching and online reporting.

It is high time for Nepal country teams and the WHO to identify factors that have influenced the uptake and sustainability of implementing MPDSR systems to improve the quality of care and prevent future deaths. This evaluation is performed to assess WHO's contribution to establishing and implementing MPDSR in Nepal and identify the strategic approaches to support in the future, particularly considering the evolving context. The main audience of this evaluation would be key stakeholders who are responsible for managing the surveillance system and collaborating with WHO. The evaluation also recommends specific areas for future collaboration, programmatic and policy-related actions, institutional reforms and changes required in terms of project design, human resources, management practices and related areas.

In this context, this evaluation report has been prepared in consultation of ministry officials, stake holders and experts concerned to MPDSR to submit to WHO Nepal. This evaluation report highlights the background, objectives, methods and approaches, findings and way forward to sustain and continue the WHO supported MPDSR program in Nepal. The evaluation will also recommend specific areas for future collaboration, programmatic and policy-related actions, institutional reforms and changes required in terms of project design, human resources, management practices and related areas.

2. Evaluation

2.1 Evaluation objectives

This evaluation aimed to assess the contribution, appropriateness and relevancy of WHO support provided to strengthen MPDSR and recommend strategic approaches to be followed in the future. It was also intended to assess WHO's contribution in establishing and implementing MPDSR in Nepal and identify the strategic approaches to support in the future, particularly considering the evolving context. The evaluation recommends specific areas for future collaboration, programmatic and policy-related actions, institutional reforms and changes required in terms of project design, human resources, management practices etc.

The following were the specific objectives of the evaluation:

- To evaluate the extent to which the MPDSR is suited to the priorities and policies of Nepal at central, provincial and district levels. It also evaluates the relevancy of the WHO's support, considering responsiveness to the needs of the programme, changed context due to federated governance structure, COVID-19 pandemic and other ongoing efforts and mechanism, such as increasing institutional deliveries, to capture mortality statistics, global and regional development of MPDSR programme.
- To assess the extent to which the MPDSR attains its programme objectives and the effectiveness of the efforts made by WHO in terms of initiating institutionalizing and scaling up MPDSR in Nepal and linking findings from such mechanism with the public health actions and policy and programme development processes, which includes assessment of quality of total MPDSR process including review process and effectiveness on scaling up as agreed in the project plan. How far MPDSR process is in line with WHO proposed guidance.
- To assess the ownership of the programme by respective entities at national and subnational levels. Moreover, domestic resource mobilization approaches and possibility in the immediate or long-term will be also assessed. It may evaluate, to what extent MPDSR process is mainstreamed in Nepal health system and WHO contribution on mainstreaming.
- To analyse whether the benefits of the programme are likely to continue after WHO's support has been withdrawn and the sustainability of the programme in the context of changing landscape, tools and technology, capacity building, and federated health governance structure. Likewise, collaboration and institutional capacity building will be also evaluated to ensure sustainability of the support.
- To assess WHO's role in forging partnership among various stakeholders who play a vital role in maintaining and strengthening MPDSR in Nepal. The assessment will also evaluate the current level of partnerships and opportunities for further expansion.

2.2. Evaluation Questions

The following were the examples of some evaluation questions which were elaborated/ expanded in consultation with WHO and FWD. The evaluation questions envisaged for this evaluation were following;

- What is the status of the maternal and perinatal death review (M/PDR) practices in Nepal? What is the coverage of MPDSR or how far it has scaled up geographically, depth of review and how it has evolved? What changes/ millstones happened in the programme over the period?
- What was the contribution provided by WHO been able to contribute to strengthen MPDSR in Nepal? Which includes but is not limited to technical, financial, capacity building, monitoring of implementation, implementation support, normative and guidance, horizontal collaboration, support from regional office and headquarters?
- To what extent has the support improved and impacted on surveillance attributes including representativeness, data quality, acceptability, sensitivity etc.?
- To what extent was the support aligned with WHO guidelines and proposed steps of MDSR such as identification of deaths, review process, response mechanism, ascertain cause of death using ICD MM/PM classifications, pregnancy checkbox in death declaration form. What is the response mechanism, is it effective for mortality reduction?
- What are issues and challenges that prevented full delivery of intended support?
- What are the best practices and response actions as well as enablers of its implementation? Capture lessons learnt, best practices, success stories?
- Are there any good examples of systems strengthening and linking findings in the decision-making process facilitated by WHO to improve MPDSR and maternal, perinatal mortality reduction in Nepal?
- What are the additional contributions largely attributed to WHO support?
- What are the key challenges faced by WHO interventions in this area at the level of inputs, processes, outputs, outcomes and impact?
- What influence was made by WHO to establish sustainability plans or mainstreamed plans to incorporate MPDSR into health systems? Is MPDSR included in national plans? Are there structural changes in respective division made to drive the programme and its linkages, any policy changes, any gaps in policies?
- What changes, if any, ought to be made to the current working modality and strategy to ensure that future interventions are: based on comparative advantages, tailored to the country needs, effective and efforts are sustained in the context of both internal and external changes / developments?
- What would be the WHO's role in forging partnership among key stakeholders, professional societies and partners working in the area of MPDSR?
- Any changes happened and use or replication of MPDSR was considered during pandemic?

3. Methods

The evaluation was conducted by two consultants, one each from international and national levels recruited by WCO. The international consultant is a public health specialist from a country in the SEARO region with over 12 years work experience in MPDSR at national level and expertise in program evaluation. The national consultant, is also a public health specialist from Nepal with a more than 27 years of experience in national public health system under ministry of health and population, retired one year back from the post of Chief of the Policy, Planning and Monitoring Division, Ministry of Health and Population, having expertise in planning and managing Reproductive health, Safe motherhood and newborn health in Nepal.

Following tasks were carried out;

Task 1: Preparatory work / Orientation
Task 2: Refining evaluation questions and designing tools
Task 3: Literature Search
Task 4: Interviews with key informants
Task 5: Site visits and observation of the MPDSR system
Task 6: Analysis of findings and draft evaluation report
Task 7: Consultative and feedback collection meetings
Task 8: Final evaluation report

A detailed description of the various components of the approach and methodology is provided below:

Task 1: Preparatory work / Orientation

The international and national consultants with the support of WCO facilitated a series of in-depth consultation calls (off-site) to receive an orientation on the country's healthcare delivery system with a special focus on maternal care and MPDSR. Consultants also received a detailed description of the expected evaluation methodology. Whenever feasible, consultation calls were extended to include MPDSR focal points in the Ministry of Health to get an overview of MPDSR implementation in the country. All discussions from these consultation calls were systematically documented. The calls provided the evaluation consultants and WCO with the opportunity to:

a. Link with the WCO officials and evaluation consultants to plan and carry out the study.
b. Inform the design and planning stage, including finalizing the specific themes and questions for the evaluation study.
c. Review and provide feedback on the methodology and the data collection templates.
d. Discuss and agree on the proposed time frame for the development of the evaluation.
e. Identify and share relevant country-specific literature eg. MPDSR documents, policies, frameworks, reports, and secondary data.
f. Identify key stakeholders and agencies in the country / WHO who plays a partial or sole focus on MPDSR of Nepal

g. Identify key MPDSR stakeholders and organizations involved in MPDSR implementation, and in consultation with WCO/Ministry of Health, agree on key stakeholders to be interviewed.
h. Confirm the preferred mode of interviews.
i. Confirm if any in-country ethics committee approval is required.

A country-specific MPDSR – Preparatory phase questionnaire (Annexure – 2) developed based on the parameters suggested in the chapter on Monitoring and evaluation of the MDSR system in the WHO publication Maternal death surveillance and response: Technical guidance information for action to prevent maternal death (2013) (Annexure – 3) was used to compile a baseline picture of Nepal's MPDSR situation.

Task 2: Refining evaluation questions and designing tools
The national & international consultants further refined evaluation questions in consultation with WCO. Based on the final set of evaluation questions, data collection tools (e.g. Literature review templates, data collection formats, semi-structured interview questionnaire, site visit checklists) were designed to answer evaluation questions.

Task 3: Literature Search
An electronic search for primary and review research with "Maternal Mortality" "Perinatal Mortality" and "Nepal" as keywords or Mesh terms in their Title or Abstract, published in Scopus, PubMed, and Google with no time or geographical limitation was conducted. Most relevant articles were also hand-searched. Documents or reports related to policy and programme including national strategic guidelines, circular directions, training packages / programmes, standard operating procedures etc were obtained through WCO and the national consultant. All relevant literature were reviewed and key information on MPDSR implementation and achievements in the country and responding to maternal deaths will be abstracted.

A desktop exercise was carried out to document achievements of MPDSR to date – individual and institutional capacity building; system structures; quality and culture of use of surveillance results at the local or institutional level and programme level.

At the first stage national and international documents related to MPDSR were thoroughly reviewed. Following major documents were covered for review:

- MPDSR program guideline, Nepal, 2021
- MPDSR program operation guideline, Nepal, 2021
- MPDSR Guideline, Nepal, 2015
- Nepal Safe Motherhood and Newborn Health Roadmap 2030, 2019
- Maternal and Perinatal Death Review Situation Analysis Report, 2013
- Maternal and Perinatal Death Surveillance and Response in Nepal, 2019
- Annual Report (FY 2019/20 and FY 2020/21).
- MPDSR Fact Sheet (FY 2020/21)
- MPDSR Fact Sheet, Nepal (July - April 2022)

- Maintaining Essential Reproductive Maternal Newborn Child Adolescent Health (RMNCAH) Service, 2021
- Other available progress reports and training reports related to MPDSR

Task 4: Interviews with key informants

Key informants were purposively selected in consultation with WCO and Family Welfare Division (FWD), Department of Health Services, Ministry of Health and Population, Nepal. The interviewees included were those who were or currently are involved at various stages of the implementation process and are aware of implementation challenges and solutions; those who implemented MPDSR at sub-national or national level and were / are involved in one or more phases of the MPDSR cycle. This comprised a spectrum of stakeholders/implementers in the healthcare delivery system of Nepal starting from the ground-level healthcare workers to top-level ministry officials and WHO present and past program officers (eg. MoHP, DoHS, WHO (HQ, SEARO & CO), health sector partners who were actively engaged in strengthening MPDSR and/or utilizing surveillance findings, Health Offices and HWs).

The key informant interviews were conducted by the international and national consultant mostly by videoconferencing, a few face to face with appropriate infection prevention measures, or by telephone in the preferred language of the interviewee.

The interviewer used a semi-structured interview questionnaire (Annexure – 4) to guide the interview and explored how ideas were conceived, decision-making processes, WHO contribution, the approach to implementation including training and local adaptations, lessons learned, monitoring of implementation, and use of data for decision making. The interviews were used to gather information from the distant and recent past on MPDSR implementation, challenges faced and bottlenecks to implementation. The focus was directed to what extent achievements to date address and meet the needs of the programme, particularly in improving public health actions for safe motherhood programme. Current sector needs and alignment of the WHO's priorities and activities, including operational approach and modalities, were also assessed. Interviewees were asked to provide feedback on the progress as well as areas for improvement.

The Semi structured interview questionnaire was tailored to collect information from specific key informants. Based on the level and expertise, interview questionnaire modified for the following categories:

a. MOHP and DOHS
b. WHO SEARO/HQ team
c. WHO country office team
d. External Development Partners and other associations/academia
e. Provincial governments
f. implementing hospitals

The interviewers recorded all interviews and used a standardized reporting template to summarise information from the interviews in the English language. The interviews took place within a specified time period agreed upon with WCO.

The following individuals were selected as key informants and interviewed representing a wider spectrum of stakeholders of MPDSR in Nepal (Table – 1) (List of interviewees are given in annexure – 1)

Table - 1

Breakdown of Key Informants

S.No	Name of organization	No
1.	WHO (Regional and Country Office)	6
2.	Other Developmental Partners (UNICEF/NHSSP)	2
3.	MoHP and DoHS	11
4.	Provincial Stakeholders	3
5.	Professional Organizations (NESOG /PESON)	3
6.	Medical colleges	3
7.	Maternity hospitals	1
8.	Provincial hospitals	1
	Total	30

Task 5: Site visits and observation of the MPDSR system

The sites to observe the implementation of the MPDSR system were as decided in consultation with the WHO evaluation team.

a. Paropakar Maternity and Women's Hospital, Kathmandu
b. KIST Medical College and Teaching Hospital, Lalitpur
c. Patan Academy of Health Sciences, Lalitpur
d. FWD, DoHS Kathmandu

The sites included different levels of implementing MPDSR system (MDSR, PDSR, Central Level – FWD etc). The number of sites were selected as decided in consultation with FWD and WHO country office.

Information related to MPDSR functionality, completed case formats, web-based system, review meeting documentations, action taken etc was observed onsite.

Task 6: Analysis of findings and draft evaluation report

The findings of the literature review and key informant interviews were synthesized and analysed in a mixed methodology to answer the evaluation questions. All primary data were transcribed in the English language prior to analysis. The analyses triangulated all available information and perspectives from the documents reviewed and interviews. The information/transcripts were analysed using manual inductive coding, and the resulting thematic and narrative analysis provided deeper insights into the MPDSR implementation approaches and the WHO's contribution. Analysis was conducted at the policy and programme level like a retrospective programme evaluation focusing on areas e.g. WHO contribution, alignment with WHO guidelines, role in forging partnership among key stakeholders, challenges faced etc. WHO Health system performance assessment principles were adopted in addressing evaluation questions (26). Selected verbatims were used to emphasize the important findings.

The evaluation report was prepared answering the evaluation questions and also describing the relevant areas including Health care delivery system, trends in maternal & perinatal mortality, MPDSR implementation, recommendations etc.

Task 7: Consultative and feedback collection meetings

A consultative and feedback collection meeting with the WHO team was conducted at WCO. The national and international consultant shared the preliminary findings. Feedback and suggestions from participants were noted to be incorporated in the final report.

Task 8: Final evaluation report

A detailed final evaluation report was prepared following the inputs gained through the consultation of officials of the Ministry of Health and Population, WHO team and other key partners. The final evaluation report will be submitted to the WCO.

4. Evaluation Findings

4.1 Maternal and Perinatal Deaths

Nepal records various attempts in counting or estimation of maternal mortality in the history. The country conducted a Population Census every 10 years since 1911. The need for a valid Maternal Mortality Ratio has been perceived after starting the Safe Motherhood program. Nepal's two main sources of data providing national MMR estimates are the Nepal Demographic Health Survey (NDHS)/ Nepal Family Health Survey (NFHS) and UNIGME Estimates. NDHS used a series of questions designed to obtain a direct measure of maternal mortality. NFHS were conducted in the years 1991 and 1996. In the year 1998, a Maternal Mortality and Morbidity Study (MMMS), in the form of RAMOS, was conducted with a specific focus on maternal mortality. The study was also aimed to obtain a detail picture of the causes of death for women of reproductive age. Although NDHS was conducted in 2001, it did measure maternal mortality. In 2006, the NDHS applied a variant of the sisterhood approach - the direct sisterhood method. NDHS used the same questions of NFHS - 1996 in this study. As the sisterhood method is a time of death measure rather than cause of death measure capturing pregnancy related deaths rather than maternal deaths. The MMMS of 2008-2009 adopted mixed model with both qualitative and quantitative approaches. The components included a community surveillance system, Maternal Death reviews, Rapid facility and staff competency assessments, Emergency Obstetric Care (EOC) monitoring and qualitative components (group discussions and interviews). Table – 2 provides some of the data available on MMR for Nepal.

Table - 2

Maternal Mortality Ratio of Nepal (1987-2021)

Reference Year	**MM Ratio** *(Per 100,000 live births)*	**Data Source**
1991	515	NFHS, 1991, MOH
1990-1996	539	NFHS, 1996, MOH
1998	596 - 683	MMMS, 1998, MOH
2006	281	NDHS, 2006
2009	229	MMMS, 2008/09, M0HP
2015	236	UNIGME 2000 - 2017
2016	239	NDHS, 2016
2017	186	UNIGME 2000 - 2017
2020	174	UNMMEIG MMR Estimates 2022
2021	151	National Population and Housing Census 2021

The data sources provide point estimates of MMR and indicate that the country's maternal mortality has declined significantly (48%) over a period of ten years. In 2008/09 with the support from SSMP, the second Maternal Morbidity and Mortality Study (MMMS) was conducted. It showed that the overall MMR for the eight districts under study was 229 per 100,000 live births, ranging from 153 to 301 by district. Maternal deaths were reported 60% from community and 40% from hospitals (27).

The 2011 Census data estimated 2100 maternal deaths in the preceding year. However, this was queried by many experts as over reporting or contaminated data. Again in the year 2015, an estimation of MMR from population census data was done based on UN manual on maternal mortality estimation to report an MMR of 475 (per 100000 live births). This was also considered not acceptable. This called for a meeting by the Government Planning Commission (It also covered MDG monitoring). The need to obtain quality data was emphasized and recommended a community surveillance approach.

In the year 2017, WHO (HQ/SEARO/WCO) facilitated the country consultation for UNIGME maternal mortality trend estimation 2000 - 2017. Nepal estimates of MMR for the years 2000, 2005, 2010 and 2015 were 553, 415, 305 and 236 respectively. For the year 2017, the country reported an estimated 1100 maternal deaths with an MMR of 186 with a wider uncertainty (135 – 267). Out of the seventy-one countries with an MMR greater than or equal to 100 in 2015, only five countries, which includes Nepal, had an overall two thirds reduction of between 2000 and 2017. However, a satisfactory annual rate of reduction (ARR) was noted for Nepal. It is predicted that Nepal would reduce MMR by 6.4% each year between 2016 and 2030 (28).
The figure – 3 shows the progression of MMR of Nepal from 1996 and predictions till 2030.

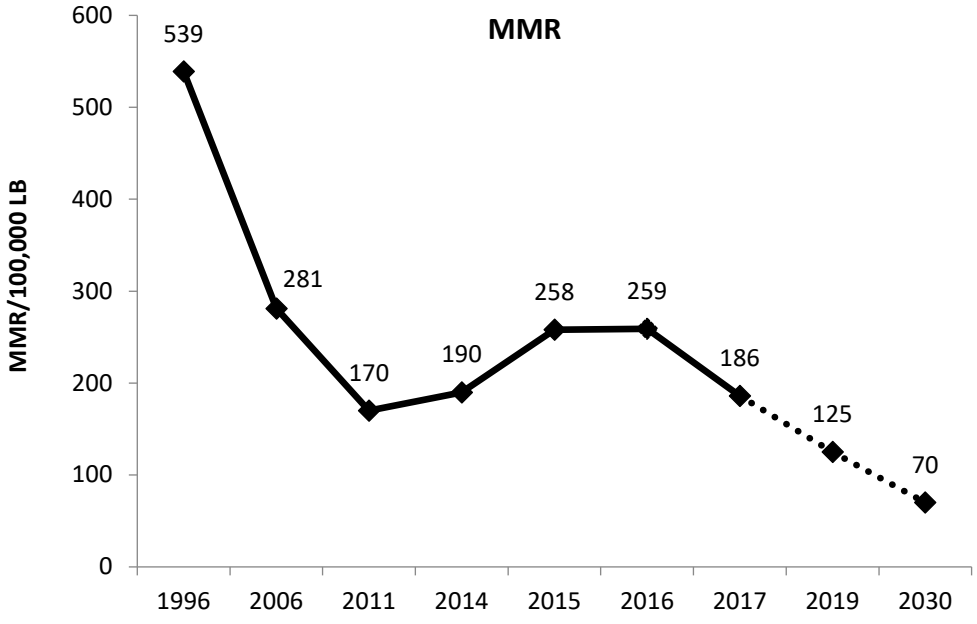

Figure – 3
Progression of MMR of Nepal 1996 - 2030

The government scaled up MPDSR in the country from 2015 and planned to compute MMR for the year 2018 from the data originating from MPDSR. However, this could not be done as expected as the MPDSR could not be institutionalized country-wide.

In 2021, a Reproductive Age Female Death (RAFD) study from the Census was proposed by MoHP and was endorsed by the GoN. An MoU was signed between the National Statistics Office and MoHP. WHO was involved in design, tools development, training of data collectors, data analysis and report writing. The project was funded by GoN, USAID, UNFPA and WHO. Figure – 4 outlines the study process.

Figure – 4
Outline of study method – RAFD Study 2021

In addition, surveillance data from Mother and Infant Research Activities (MIRA) and the Health Management Information System (HMIS) of the MoHP are the other sources of maternal mortality data.

The country's latest estimate on the annual number of stillbirths is 9739 with a stillbirth rate of 15.7 (10.8 – 23.0) per 1000 births and is among the top 20 countries with greatest percentage decline (48 [CI 25 – 64] %) in the stillbirth rate from 2000 to 2021 with an ARR of 3.1 (29).

4.2 Evolution of MPDSR System

With a goal to "eliminate preventable maternal and perinatal mortality by obtaining and using information on each maternal and perinatal death to guide public health actions and monitor their impact", numerous efforts have been adopted in the past to establish an MPDSR System in Nepal since the early 1990s. Figure – 5 depicts the key milestones of the evolution of the programme over the past few decades.

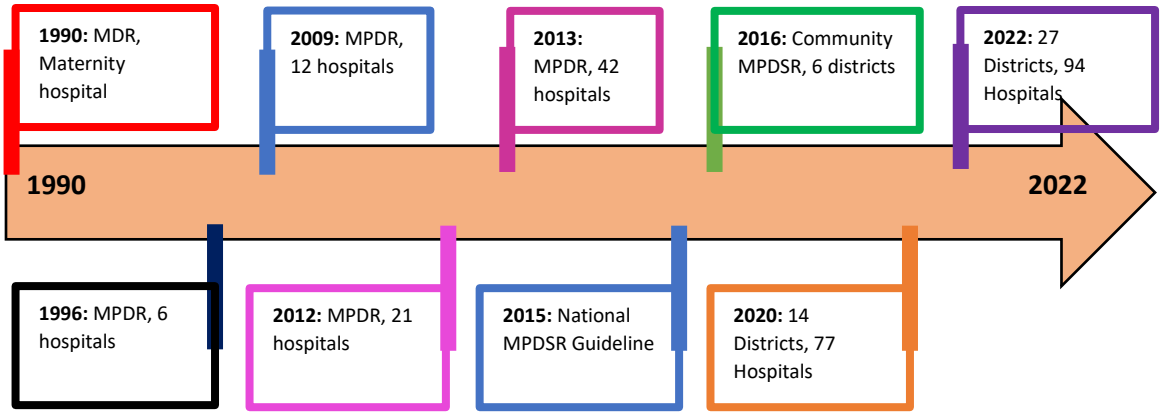

Figure: 5
Key milestones of the evolution of MPDSR in Nepal

With technical support from WHO, a Maternal Death Review (MDR) mechanism was started first in Paropakar Maternity and Women's Hospital designed by Family Health Division in 1990. This was started as completely a WHO program. MoHP agreed on the activity, but no funding was allocated. NESOG was involved in developing the mechanism. The MDR program was further expanded in several hospitals. A governance structure was introduced with an advisory committee established under FHD with other representatives from MoH.

In 1996/97, a Maternal Mortality Study was done in Kailali, Okhandhunga and Rupandehi as part of Maternal Mortality Review. At the community level, reproductive age female deaths (RAFD) were identified and screened to ascertain as a maternal death. Parallely, a maternal death audit was conducted in 4 hospitals of the three districts. A total of 132 maternal deaths were captured from 640 RAFDs (30).

In 2003 FHD in collaboration with WHO developed the guideline on Maternal Death Review, revised the maternal death review process and incorporated the hospital Perinatal Death Review (PDR) component. In 2006, the national Maternal and Perinatal Death Review committee implemented the Maternal and Perinatal Death Review Program in six hospitals across the country. The Maternal and Perinatal Review forms were revised following the second Maternal Morbidity and Mortality Study 2008/09.

In the years 2011/12, all the stakeholders, including FHD, were keen to revisit MPDSR in the country. UNICEF supported an Appreciative Inquiry (AI) on MPDSR in the parliament and initiated a dialogue with NESOG to motivate them for MPDSR.
WHO facilitated a dedicated meeting to restructure the MPDSR program. Although the then D/FHD was strongly positive, due to other competing priorities, budgetary constraints and human resource issues, FHD requested WHO to support the program and demonstrate the success. NESOG was in a strong position for moving forward with MPDSR. Incidentally, Director/FHD was a member of NESOG. Some of the obstetricians were emotionally motivated and showed their commitment to the activity. Only WHO dedicated the funds for MPDSR in annual workplans to launch the program. WHO and UNICEF collaborated for supporting and funding MPDSR. A technical working group (TWG) was established with representatives from FHD, WHO, NESOG, UNICEF, UNFPA etc. which met every 2 weeks. A delegation was trained on MDSR from WHO regional office. Another revision of the Maternal and Perinatal Death Review forms was also undertaken, and obstetricians were orientated on it. WHO was able to revive the program, get all the partners onboard and launch the program after 2 years of effort. WHO covered the implementation of MPDSR at maternity hospitals under MoH purview as a demonstration project to FHD. An implementation guideline (following the global guidance) was introduced later. This expanded the MPDR program into five more hospitals to achieve a total of 21 hospitals. The system was further expanded to involve 42 hospitals in 23 districts in 2013.

Until 2014, MPDSR was entirely led and supported by WHO. Even though the MPDSR was initiated in the early 1990s, the evolution of the program with expansion has been slow. There have been gaps in data recording and reporting but a review of the program has been conducted. The MPDSR advisory committee was not functional or active. The MDSR form had 37 pages and was not acceptable to hospital data originators. Filling in the form was not satisfactory. Even the NESOG was not enthusiastic. FHD was also not much involved.

An analysis of data originated from MPDR for the period April 2013 to March 2014 in 42 hospitals was done. This revealed that the leading cause of the maternal deaths was obstetric hemorrhage.

The year 2014 marks an important landmark of country's MPDSR. The FHD of Ministry of Health of Nepal was enthusiastic along with the launching of the Commission on Information and Accountability (CoIA) by the Secretary General of the United Nations as a global strategy to improve the health of women and children. Then Director – FWD decided to take the lead on MPDSR considering it a high priority. Chief of Planning, Monitoring and Demography / Senior Demographer of FWD perceived revisiting the MPDSR process. An evaluation of the situation was carried out. Fourteen hospitals were visited, only 50% of the hospitals were performing well. WHO was requested for a review. MPDSR was reviewed with the participation of high-level policy makers including the Secretary of Health and Director General of Department of Health Services. A series of consultative meetings were conducted to revisit the system. Stakeholders included MoH officials, President – NESOG, WHO – NPO, District Public Health officials, Auxiliary Nurse Midwives (ANMs) & Health Post In-charge etc. from Community health

facilities etc. from Community health facilities etc. WHO was supporting all the activities. FHD developed the MPDSR guidelines and an implementation plan in 2015. MoH endorsed the mechanism. The political commitment was shown by approving the guidelines by the Minister of Health on his own summoning the relevant officials to his office. MPDSR was started with all elements. MPDSR committees were established. Major funding was from MoHP. Only part of the funding was provided by WHO. Technical support was mainly from WHO.
It was decided to expand the project to 42 hospitals. Monitoring was done at central level. A fair number of maternal deaths (n=116) was reported. WHO facilitated an observational study tour on MDSR for a team of country delegates in the same year in Sri Lanka.

In 2016, the regional meeting on MDSR was conducted by WHO regional office and country plans were prepared. In the same year, Nepal decided to restructure MPDSR to capture maternal deaths from the community level as well. A community-based MPDSR (C-MPDSR) was introduced in prioritized districts. Since 2016, the MPDSR program was implemented in six districts (Solukhumbu, Dhading, Banke, Kaski, Kailali and Baitadi). These districts were reporting a high number of MDs in HMIS. WHO supported the implementation of MPDSR in 2 districts. MPDSR training commenced. Training of community health workers at the District Public Health Office and Health Posts on conducting verbal autopsies (VA) was started. The WHO 2014 verbal autopsy questionnaire was used to collect maternal death data reported from the communities. A Female Community Health Volunteers (FCHV) notified pregnancy related deaths and screening was done by Auxiliary Nurse Midwives. Verbal Autopsies were conducted in these districts. This facilitated more public health personnel to get involved in the MPDSR process (31). Similarly, the Hospital MPDSR was revamped in highly-burdened hospitals. These were the hospitals to which women attend for deliveries and they were paid incentives. MPDSR training commenced.

A web-based system for MPDSR was started with support from WHO in 2017. An orientation training package of MPDSR was developed. The program was expanded, and the number of trainings increased. In 2017 (or 2018) – A national MPDSR workshop was conducted with all provincial representatives. An action plan with a response mechanism was developed supported by WHO. WHO took the lead in incorporating ICD-MM into the hospital MPDSR formats in 2021 and ICD-PM in 2022. ICD-MM was introduced to verbal autopsy in 2022.

4.3 Current status of MPDSR

The updated Program Guidance Document on MPDSR issued in 2021-2022 (32) gives detailed information and instructions on the implementation of the MPDSR process at each level. The operation of the country's MPDSR system at present is depicted in figure – 6.

Notification: A probable maternal death in the health facility should be identified immediately and the MPDSR committee at the health facility should be notified immediately. In the community also, a death of a woman aged 12-55 years due to any cause has to be notified by the Female Community Health Volunteers (FCHVs) to the nearest health facility, within 24 hours.

Screening: The health facility should immediately identify any maternal death in the health facility. Similarly, in the community, the nursing staff from the health facility should visit the deceased woman's home and fill out a screening form to determine if the reported death is a probable maternal death. If it is a probable maternal death, a team from the local level should be sent for Verbal Autopsy. Verbal Autopsy should be done within 30 days and the cause of death should be assigned by a trained physician.

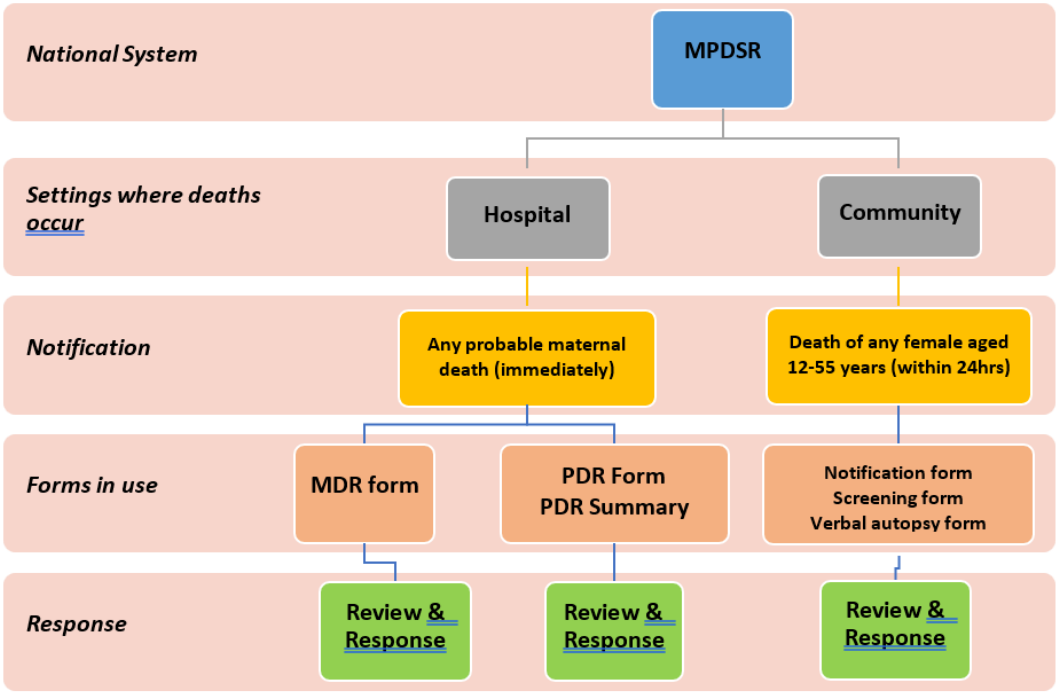

Figure – 6
Current operational mechanism of MPDSR in Nepal

Death Review: In the community, the Local Level Maternal Death Review Committee should review the case immediately to identify the possible medical and other (non-medical) causes, evaluate the solution to those causes, identify the necessary actions and implement them in the community to prevent similar deaths in future.
Similarly, the Maternal and Perinatal Death Review Committee at health facility should conduct an evidence-based review of all maternal and perinatal deaths in the health facility within 72 hrs. After the review, data should be entered into the web-based system by both community and hospital staff. The details should be shared with the Health Office, Province Health Directorate and Family Welfare Division.

4.3.1 Hospital level functioning of MPDSR

The two-member evaluation team met representatives either physically or virtually to ascertain the current status of implementation of MPDSR in a selected group of hospitals.
The findings are summarized in the table – 3. More details are given in annexure – 7.

Table – 3

Summary of findings on Hospital level functioning of MPDSR in a selected group of hospitals

S.N	Hospital	Hospital profile	MDSR	PDSR
A.	Paropakar Maternity and Women's Hospital	• First maternity hospital of Nepal • 1 birthing center, labor rooms, 3 emergency theatres, 4 gynecological theatres, blood bank, MNS antigen blood grouping • 45 obstetricians, 3 pediatricians and 8 anesthetists • Patient admissions and investigations computer-based • Approx. 24,600 deliveries with CS rate of 37%/ year • 4 maternal deaths, 688 PNDs (527 – IUD, 89–Fresh stillbirths, 195 NNDs) reported last year	• MDSR first started in Nepal from this hospital - MPDSR national guidelines strictly followed • Legal indemnity not arisen up to now	• PDSR first started here • PDSR conducted as per the national guidelines, except data is not entered into the web-based system • Only two monthly PDSR meetings were conducted for the past fiscal year • No individual case discussions take place
B.	Patan Academy of Health Sciences (PAHS)	• An avg. of 6000 deliveries occur per year • Only two maternal deaths occurred in the previous year • An MPDSR focal person (a fetal-medicine specialist) involved since the last 5 years	• In case of a maternal death, nursing in-charge notifies the Ob/Gyn HoD and medical recorder • MPDSR process followed according to the guidelines • Cases discussed in a non-threatening environment • No formal mechanism in place to monitor the progress of implementation • No formal MPDSR training for the hospital team • Hard copy of management guidelines or wall charts could not be located	• Additional focal point for PDSR available in the hospital. • Data collected on the cases and every third Friday, monthly PDSR meeting • Analysis of mortality and scientific publications performed annually
C.	Seti Provincial Hospital	• Caters to 10000 women for their deliveries annually. • 5 obstetricians and 3 anesthetists, CS rate of 13% • 3 maternal deaths last year and two deaths this year reported	• MPDSR carried out according to the national guidelines	• PDSR meetings conducted every last Friday of the month • Refresher training for MPDSR team required • No other agencies supporting MPDSR except WHO
D.	Nepalgunj Medical College Teaching Hospital – Kohalpur	• Referral center for nearby districts • Well-established Ob/Gyn department with two assistant professors, four lecturers and seven residents, one neonatologist and four assistant professors of pediatrics. • Approx. 6100 deliveries last year with a CS rate of 22%	• Review meeting is conducted with the involvement of district public health office • A copy of the MPDSR sent to DHPO • Rest of the MPDSR process followed according to the national guidelines	• Monthly PDSR meetings not regularly conducted (Only two meetings conducted over the last seven months) • Summary PND form confusing • Refresher training crucial for the entire team

		• 11 maternal deaths, 171 stillbirths (28 fresh and 143 macerated) and 55 ENNDs reported last year		
E.	KIST Medical College and Teaching Hospital	• Operates independently as a private medical college • Two pediatric units (60 beds), 7-bedded NICU and a nursery with 7 beds • Eight pediatricians but no neonatologists • 1450 deliveries conducted last year • 5-6 neonatal deaths reported per year with the leading causes being sepsis, prematurity and birth asphyxia	• An MPDSR coordinator appointed alternatively from obstetrics and pediatrics each year. • CoD revised based on the discussion and categorized with ICD-PM classification • Recommendations formulated based on SMART components and follow-up conducted to check for their implementation	• PDSR activity was found to be prioritized here • Departmental review organized every month (second Wednesday) • Cases deidentified and "no name, no blame" environment maintained

4.3.2 Site visits and observation of the MPDSR system

The sites selected were mainly hospitals and the central level organization responsible for monitoring – FWD. The findings are summarized in the table – 4. More details are given in annexure – 8.

Table – 4

Summary of findings on Site visits and observation of the MPDSR system

S.No	Hospital visited	Observation / Findings
A.	Paropakar Maternity and Women's Hospital	• Maternal deaths reported in a designated format. However, two columns- timeline and monitoring not filled • A MPDR review meeting register for the years 2077/2078 noted with attendance information • Data entry process could not be assessed due to technical errors • On average, 35–40 PNDs occur per month • PDR forms for stillbirth not filled either by doctors or nursing officers • PDR forms not received for entering into the web-based system at present • Formal MPDSR training not received by the team
B.	Patan Academy of Health Sciences (PAHS)	• A systematic process of MPDSR information compilation was observed • The team members were thorough with the entry and processing of MPDSR data in the web-based system • Although the individual PDR forms could not be located, there were multiple periodic (monthly) PDSR analyses done and shared • A methodical system was in place for storing clinical records
C.	KIST Medical College and Teaching Hospital	• MPDSR information and documents are maintained systematically • A satisfactory data compilation was observed • The data management system was impressive. • MDR meeting recommendations are entered in the MPDSR register • Monthly analyses of PNDs are undertaken and they are readily available

D.	Family Welfare Division (FWD)	• The web-based MPDSR system and the central monitoring process were observed. The data system operates in DHIS-2 platform. -Web-based MPDSR is implemented in 94 hospitals (58 districts including private hospitals) and community MPDSR in 27 districts (out of 77) • Monthly summary data of hospital perinatal death meetings are available in the system. • Individual perinatal death data are filled by facilities but they are not entered in the web-based system at central level. • WHO focal person at FWD and an official from FWD monitor the data entry, completeness and quality of data. However, there is no specific official designated for MPDSR from FWD. • A Viber group is in operation to notify the number of maternal deaths occurring in both facilities and community. • Even though the estimated number of maternal deaths is nearly 1100 (based on 2017 UNIGME estimations) for an estimated live birth of 600,000 (79% of skilled birth attendance), number of individual, maternal death data available at web-based system is well below. It is only 176 maternal death records that available in the web-system for year 2021/2022 (Figure – 8). • Community level data generation is not satisfactory. • Data monitoring at central level is not methodical and not up to the expected level. - Data triangulation has not been considered. • VA model has not been introduced in Kathmandu area which consists of 20 palikas.

4.3.3 MPDSR training

Various modalities of training in MPDSR strengthen skills of the maternal and perinatal health program managers, providers in MPDSR processes that contribute to reductions in preventable maternal and perinatal deaths and improve the quality of maternal and perinatal health care.

In 2002/03 a training on Maternal Death Review have been provided to doctors and nurses in public hospitals in collaboration with NSMP, UNICEF and NESOG. WHO facilitated an observation visit on Maternal and Perinatal Death Review (MPDR) in Sri Lanka for 06 Government Officials of Ministry of Health & Population, Nepal in December 2013. WHO also trained a team of ministry of health delegates in Sri Lanka November to December 2014 as a horizontal collaboration of SEARO and WCO. They provided a hands-on exposure on both hospital and field MDSR procedures in Sri Lanka.

A series of trainings were conducted for the implementation of MPDSR in Dhading, Kaski, Kailali, Banke and Solukhumbu during April – May 2016. This included three categories of trainings. A district level stakeholder orientation program on MPDSR was done with the objective to orient the district stakeholders including Government and Non- government stakeholders working in different sectors such as health, education, security, local development, media, on MPDSR as well as their role in successful implementation of MPDSR. The second training was for hospital-level health workers on MPDSR a). to orient hospital staff on MPDSR, objectives, rationale and processes involved, b) to explain and practice the Maternal Death Review (MDR) and Perinatal Death Review (PDR) tools for the health care services providers at the hospitals and c) to discuss on the death, cause of death and accountability mechanism to improve quality of care at the hospital level. The community-level health workers

training on MPDSR was conducted with three objectives; a) Orient health facilities staff on MPDSR, objectives, rationale and processes involved, b) explain and practice Verbal Autopsy (VA) tool for health workers at the HP levels and c) plan for orientation to the Female Community Health Volunteers (FCHVs) on identification and notification of deaths in the community. The training was conducted first in Dhading District. The selected trainers of MPDSR implementation were officials from FHD supported by Ipas, WHO and NHSSP who participated this workshop to observe, learn, and give feedback on best practices to maximize the effectiveness of the training. The trained MPDSR implementation pool was divided into two teams. Each of the team started implementing MPDSR in two different districts after this training (33).

WCO in collaboration with FHD and Directorate of Health Services (DoHS) organized a training workshop in CoD assigning for maternal deaths based on tools in October 2016. The resource person was an internationally renowned expert in verbal autopsy tools development, cause assignments from VA and software for cause assignment from VA. The target group was officials who would be involved in assigning CoD from VAs and prospective trainers. In the same year, another trainer's training was organized by FHD and WCO on "Maternal Death Cause Assignment from Verbal Autopsy" for the medical officers involved in the implementation of MPDSR at district level (34).

In March and August 2021, WHO SEARO conducted a series of virtual MDSR capacity building workshops to strengthen capacity of the member countries on MDSR in lieu to combat adversity created by COVID 19 pandemic on the face to face workshop. The modality included interactive virtual presentation and discussion using PowerPoint Presentations, whiteboard, chat box, raise hands, experience sharing, and group discussion in break-out sessions at a four-day training. Nepal country focal points were also trained with the objective to strengthen skills of the maternal health programme managers and providers in MDSR processes that contribute to reductions in preventable maternal deaths and improve the quality of maternal health care. The specific objectives were to: 1. Build national capacities on implementation of maternal death surveillance and response (MDSR); 2. Improve competencies on use of International Classification of Disease (10) Maternal Mortality (ICD-MM) to ascertain cause of death; and 3. Develop country plans for scaling up of MDSR at national and sub-national level (35, 36).

At present an organized system of MPDSR training at Central and Provincial level led by FWD and supported by WHO is in place. As of 2022, 94 hospitals and 27 districts are implementing MPDSR while community MPDSR training is ongoing in five additional districts. The MPDSR training package includes the elements: maternal mortality, case practices, roles and responsibilities of committees and CoD assignment. Details of the trainings conducted in the years 2021 – 2022 are shown in table – 5.

Table – 5

MPDSR Trainings 2021 – 2022

S.N	MPDSR Training	Year	Hospitals / Districts	Partici -pants
1	Orientation on Community MPDSR to Districts	2021	11	16
2	Orientation on Community MPDSR to Districts	2021	13	23
3	MPDSR Orientation to hospitals	2021	9	27
4	MPDSR Orientation to hospitals	2021	9	25
5	MPDSR Orientation to hospitals	2021	8	22
6	MPDSR Orientation to hospitals	2021	6	19
7	Orientation on Community MPDSR to Districts	2022	11	27
8	Cause of death assignment training from Verbal Autopsy	2022	14	20
9	Cause of death assignment training from Verbal Autopsy	2022	15	22
	Total			**201**
	Hospitals		32	
	Districts		35	
	CoD		19	

Master facility training in Province one was just completed. Thirteen Medical and nursing officers from core hospitals (including 2 medical colleges) were trained. This included two days for facilitators and two days as Training of Trainers. The trainees will cascade in their own facilities.

In the year 2020, an MPDSR virtual training program was facilitated by SEARO for a country team from Nepal.

WHO is planning to identify a model centre for facility-based MDSR supported by SAFOG / Jhpeigo. The Paropakar Maternity and Women's hospital will be designated as a model centre for MPDSR implementation.

A number of review workshops have been conducted over the years for facility-and community based MPDSR. The reports are all in the shared folder. Would be better to mention them here. On-site coaching was also supported (report in the shared folder).

4.3.4 The response mechanism

The updated Program Guidance Document on MPDSR issued in 2021-2022 (32) includes clear instructions on the response mechanisms at each level. It suggests specific directions on execution of response activities based on the recommendations of the MPDSR committee and the results obtained from the analysis of the data. Actions following maternal or perinatal deaths may be targeted at a single community or health facility and may also be related towards inter-sectoral and multi-sectoral stakeholders. The guidance also emphasizes the need

for continuous monitoring to ensure that the response is implemented as per the plan. It also suggests ensuring the quality of the program and the completeness of the information. The flow of information on review findings, recommendations, and feedback at Federal (National) level is depicted in figure – 7.

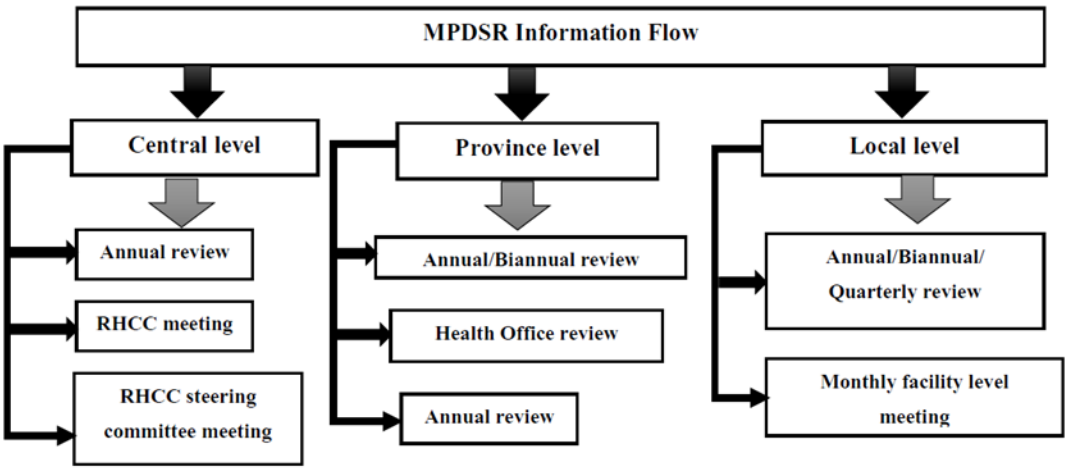

Figure – 7
MPDSR information flow
Source: Government of Nepal, Ministry of Health and Population and Family Welfare Division (2021-2022), Maternal and Perinatal Death Surveillance and Response - Program Guidance Document 2078

Several best practices and response actions as well as enablers of its implementation are notable. Some of the governments at provincial level have identified MPDSR as a high priority eg. Lumbini. They themselves have started MPDSR in the province. In three Palikas where high number of MDs were reported, the provincial government established a fund to support pregnant women. A designated person was identified at the village level to guide pregnant women with danger features to hospitals.
A number of hospitals revised their management protocols following MPDSR reviews. Based on the findings of MDs, many hospitals revised their pregnancy records -incorporated a number of new variables. MPDSR led to establishment of blood banks in hospitals. Uterine balloon tamponade was introduced as a result of MD review.
Out of the lessons learnt of perinatal deaths, several hospitals took steps to prevent neonatal sepsis. One hospital identified repeated used of endotracheal tubes (ET) as a source of infection in several neonatal deaths and changed over to disposal ET.

The table - 6 lists the issues identified at MPDSRs and actions taken at each level. It is noteworthy that a multitude of response actions have been executed because of MPDSR, although they were not documented. However, a systematic response mechanism for MPDSR is not observed. Some of the actions taken following MPDSR at hospitals have resulted in reduction of such deaths in them. Few local authorities have implemented the action plan developed as recommended by MPDSR committees which resulted in the prevention of deaths

due to avoidable factors. But these efforts and actions are not sufficient and not effective enough to achieve national targets.
It was perceived as the weakest part of MPDSR.

Table – 6
Modifiable factors and actions taken after MPDSRs

Modifiable factors identified	Actions Taken by hospitals / Local levels
Delay 1: Delay in deciding to seek care • Lack of education and awareness regarding pregnancy and medical care • Delay due to inadequate counseling by service providers • Lack of knowledge on danger signs • Delay in deciding to seek care • Lack of awareness regarding ANC visits • Delay in deciding to seek care at higher facility due to financial constraint Delay 2: Delay in reaching the facility • Delay in reaching the right facility • Delay in reaching higher level facility • Delay due to unavailability / delayed arrival of transport • Delay in transporting due to lack of funds Delay 3: Delay in receiving care at the facility • Delay in receiving appropriate care / intervention at facility • Delay in diagnosis / identification of risk factors • Inadequate monitoring • Delay in referral from one health facility to higher centre • Poor communication / documentation during referral • Lack of adequate human resource • Lack of proper and complete documentation • Lack of equipment • Lack of blood, medicines and supplies • Unavailability of specialized services/ICU	• Regular and timely maternal and perinatal death joint review • Orientation to hospital staff involved in maternal newborn health • More focus on counseling during ANC • More focus on Infection Prevention and control • Ensuring availability of high-end antibiotics in emergency • Establishment of separate units for COVID / COVID like cases • Pre labour form revised with more details and pre-labor cases separately registered • Plan to establish new infrastructure for birthing unit • Budget for SNCU and caffeine therapy • Strengthening referral mechanism: circulate phone numbers of referral hospitals to all HFs • To initiate “Khushaal pariwaar” program for high-risk group: from conception till vaccination of children • Free calcium to pregnant women: some palikas • Established fund for poor: for investigations • Designated staff at referral hospital to guide cases from their palikas

4.3.5 MPDSR during the COVID-19 pandemic

Nepal was severely affected due to morbidity and mortality related to COVID-19. By mid-2022, a total of 979,140 cases and 11,951 deaths associated with COVID-19 have been reported (37). Even with its limited capacity to respond effectively, the country employed various preventive and control measures to prevent maternal morbidity and mortality due to COVID-19. A number of changes were adopted in maternal care service provision and context-specific revision of MPDSR was done during the pandemic. WHO (HQ and SEARO) supported five countries including Nepal for mitigation of service system due to COVID-19.

The Health Cluster was officially activated in April 2020 in response to the COVID-19 pandemic. The cluster mechanism aimed to ensure a systematic response to the pandemic by engaging with multiple national and international partners. The Reproductive Health (RH) Sub-cluster was established under the Health Cluster and was co-chaired by the Director - Family Welfare Division and UNFPA, as the United Nations sexual and reproductive health (SRH) agency. The RH sub-cluster was mandated to ensure the Minimum initial service package for SRH in crisis situations is effectively implemented. The Sub-cluster also functions as a Technical Working Group for RMNCAH (38).

One of the responsibilities of the sub-cluster was to ensure regular collection of information, mapping and analysis of SRH service delivery and utilization, and share information about the availability of SRH services. During the COVID-19 pandemic, the MPDSR process was continued as a priority. An MPDSR task team at FWD was working on data compilation and cause of death assignment of the maternal deaths reported during the lockdown period. This team reported back to RH subcluster to formulate strategies and recommendations to prevent them.
FWD made a directive that every maternal death should be notified from all facilities and communities including MPDSR non-implementing sites. Simplified reporting forms were introduced even for non-implementing sites. Active follow-up from FWD and partners was maintained. Every maternal death form was reviewed at the central level. An analysis of MDs was done at national level by a team of experts including NESOG.

In the first phase maternal death analysis included 43 maternal deaths. Out of them 29 deaths were reported from hospitals implementing MPDSR program; 7 from non-MPDSR implementing hospitals while 7 cases were reported from the community. Direct causes accounted for 63 % of the maternal deaths reported. Obstetric haemorrhage was found as the leading CoD. A post-partum haemorrhage orientation package was developed, and service providers in 64 hospitals were trained. The other actions resulted due to analysis included;

1. Establishing teleconsultation service and further strengthening it.
2. Transport support for referral.
3. Availability of emergency drugs in health facilities.
4. Awareness on danger signs during pregnancy and after childbirth.
5. Continue and strengthen facility-based death notification.

There were 175 notified cases during COVID-19 in 2020. FWD completed review of 119 cases. For the period April 2020 – May 2021:

- Total notified death - 258 and reported death - 180 (69.8%)
- Death in Hospital - Notified - 206 and reported 154 (74.8%)
- Death in Community - Notified - 52 and reported 26 (50%)

Out of the maternal deaths reported, the highest was from Lumbini Province (notified - 90 and reported - 62), followed by Province 1 (notified 51 and reported 49) and Bagmati Province (notified 42 and reported 29). There were 33 Covid related deaths (directly due to Covid - 29 and Covid as contributing cause - 4). A proportion of (60%) notified cases of maternal deaths that d occurred had at least 1 ANC visit. A majority of deaths (46% of total death and 62% of

Covid deaths) were reported from the medical colleges. Government referral hospitals reported 22% of total death and 28% Covid deaths. The highest proportion (30% of total death) was due to non-obstetric complications. Other major causes included obstetric hemorrhage (26%) and hypertensive disorder of pregnancy (22%). Contributing factors for maternal deaths were:

- 'Three Delays (i. Delay seeking health care, ii. Delay reaching health facilities and iii. Delay receiving appropriate care).
- Lack of sufficient Human resources
- Lack of competent health providers
- Non-involvement of senior clinicians

FWD presented a detailed MPDSR response plan which included short term, mid-term, and long-term activities to respond maternal deaths in the country (39). In the second phase of the COVID lockdown, COVID19 was attributed to the majority of maternal deaths. This initiated lobbying for vaccination of pregnant women against COVID-19. A detailed discussion on 'Prioritizing COVID-19 vaccines for Pregnant and Lactating Women' was held in September 2021 at Safe Motherhood Sub Committee working group meeting along with National Immunization Advisory Committee. Information on the outcome or the coverage achieved is not available.
WHO also supported in recruiting national consultants during the mitigation project.

At the facility level, the MPDSR committees were unable to meet for death reviews during COVID lock down resulting in delays in review at health facility following death.

4.4 Government Supportive Frameworks

4.4.1 Ministry of Health and Population

Initially, even by the bigger government hospitals and medical colleges MPDSR was understood as a project funded and managed by WHO, but this concept has changed, and the situation is improving now.
The secretary summarized the progress and impact of MPDSR since the establishment and evolution to current situation of maternal mortality reporting which has improved significantly but not to the extent to meet the SDG target. For the last 15 years, there has been a progress in the reduction of maternal deaths, but a lot of work still needs to be done in perinatal mortality in order to achieve the SDG targets by 2030. In Nepal, 30 to 40 % of deliveries take place in the community and they are usually not reported.

It is also perceived that for evidence-based planning and monitoring of maternal and newborn health services and monitoring of progress towards the SDG target, fresh and reliable maternal mortality statistics are required. The Maternal Mortality Study 2022 linked to the National Population and Household Census 2021 has been completed and the latest maternal mortality statistics have been published. MOHP is planning to implement maternal mortality reporting in all 753 Municipalities by utilizing the nurses who had been trained on VA during MMS 2022. Chief of the Policy, planning and Monitoring Division also focused on the importance of fresh maternal death estimates for evidence based planning and continuous monitoring of maternal death reporting. The focus was on the importance of linking mortality audits, HMIS, surveillance

systems, surveys and other national reporting to MPDSR to make it sustainable and to improve the quality of reporting.

HMIS on DHIS-2 platform has been implemented in all municipalities and most of the public and private health facilities, and they are entitled to report monthly on a regular basis, but there is still underreporting from the private sector. The majority of the public health facilities are reporting well in terms of quantity and quality, but the problem lies in the private sectors where the quality of reporting has to be improved. More efforts need to be directed towards enhancing the capacity of the local level reporting team.

Accountability and ownership of the program by subnational entities is a big challenge in the federalism context. Nearly three quarters of total health budget is borne by GON and about one fifth of the allocated money is unspent by MOHP. Some of the Provincial and Local governments are spending only about 10% of the total budget on health. Lack of human resources, motivation, capacity building, technical know-how and political commitment and priority appear to be the bigger challenges in implementing health programs, rather than unavailability of funds. Chief of the Policy planning and Monitoring Division, MOHP perceived that MPDSR appears to be the most neglected and least prioritized program in many subnational level hospitals.

Harmonious coordination, collaboration and coexistence among three tiers of governments and mobilization of available resources from all partners led by WHO will be a key factor for successful implementation of MPDSR program. Interagency collaboration among GON entities, EDPs and health professional societies is essential but the crucial factor for this again is capacity of the GON, the professional societies and the EDPs to support financially and technically. For the successful implementation and strengthening of MPDSR, support of WHO, especially technical, is indispensable. Since most of the GON resources are for the control of NCDs and communicable disease, support of WHO and EDPs is needed to strengthen the MPDSR and WHO has to take a lead role in collaborating with other key stakeholders to mobilize their resources. Technical and financial resources of WHO needs to be increased and tailored to the federated governance structure of Nepal. Also, technical capacities and resources of health professional societies like NESOG, PESON have to be enhanced for their meaningful involvement and active participation.

4.4.2 Department of Health Services

Initially in 1990, MPDSR was established as a maternal death audit in Paropakar Maternity and Women's hospital, Thapathali. Director General highlighted that the MPDSR process is well accepted and strictly followed for MDR, but the PDR part is still lagging behind. The policy of anonymity, no name no blame, confidentiality in MPDSR is followed except in a few instances where service providers were brought to the court.

He further stressed that MOHP has developed and implemented Minimum Service Standard (MSS) a milestone in quality improvement of health services. MSS has been implemented at all levels of health facilities starting from district levels hospitals and expanding to federal, provincial and local level health facilities. There are a few other quality and health system

improvement tools to link MPDSR and other information systems.

The Director of Family Welfare Division explained the formation of MPDSR Committees at different levels: As per MPDSR guidelines, the National MPDSR Committee is chaired by the Director General, Department of Health Services and MPDSR Technical Working Group (TWG) is chaired by the Director, Family Welfare Division. In addition, there are MPDSR committees at Health Directorate, Health Office, health facility level and Local level. The committee meeting has to commence within 72 hours of every maternal death.

MPDSR has evolved as a national flagship program since the endorsement of new MPDSR guideline adapted from the WHO guideline in 2015, and later in 2016 implemented as both hospital and community-based modality. Necessary Policy, guidelines, legal documents and necessary tools are available to facilitate the MPDSR process. MPDSR will be incorporated in all health trainings curricula including preservice programs.

The director also insisted on the amendment of the existing MPDSR legal frameworks to make sure every maternal and perinatal deaths are registered and reported. The biggest challenge is lack of dedicated staff in FWD, Province and Health offices because of staff adjustment during federal transition as well as lack adequate HR prior to Federalism.

Senior public health officer of MNH section presented that MPDSR Policy dialogue and orientation programs are being organized in all the levels of governments in a cascade, as approved in AWPB. Family Welfare Division conducted policy dialogue at provinces to sensitize the policy makers and service providers on MPDSR. Further, orientation to service providers from hospitals and local level was conducted. During these programs, they were oriented on the situation in the country and various provinces, MPDSR process, their roles, and responsibilities, how to fill forms and online reporting. Additionally, discussion on formulation, implementation and follow up of action plan were also conducted.
Contribution of WHO as a technical advisor, technical assistant and supporter of implementation is significant in MPDSR evolution and scale up in Nepal. MPDSR process is strengthened by engaging and involving all stakeholders with the help of different communication platforms and public media. MPDSR agenda will be integrated and incorporated in all the health and related sectors linked to MSS and other quality tools and MIS systems. WHO and key stake holders will be requested to increase their financial and technical resources to bridge the gaps in domestic funding to sustain the achievements and bridge the transitional resource gaps to reach the SDG targets. WHO's support for capacity building, training, orientation, monitoring, dedicated focal person for monitoring is highly appreciated. MPDSR program will not thrive rather suffer if WHO support is curtailed because WHO is the sole partner in providing policy guidelines, testing and piloting innovative interventions. Health professional societies and academia are involved in training and development of technical guidelines as resources persons only on request. NESOG is one of the pioneers of MPDSR program and is consistently advocating and promoting MPDSR as a flagship program. There are many challenges in federal government structure for managing MPDSR program because of severe shortage of trained technical staffs and the situation is more aggravated by the

discontinuation of chain of command, break in flow of information and supply chain management especially in sub national levels. MOHP has circulated a letter to all the municipalities to report all the maternal deaths irrespective of MPDSR implementation to address the issues of lack of trained HR by utilizing the nurses trained for MMS 2022.

Technical and financial support of other partners UKAIDS, UNICEF, UNFPA and INGOs is welcome but it needs to be transparent and in line with the government's external funding policies.

IHIMS in DHIS2 platform is a national MIS covering the districts including 753 municipalities, linked to more than 10,000 reporting units reporting every month using digital as well as paper base tools by the HMIS trained persons and the bulk (more than 75%) of the reporting is from public health facilities.

In the new federated governance structure of Nepal, MPDSR is implemented by hospitals and Local government with the financial and technical support of federal and provincial governments in collaboration with EDPs. While the primary responsibility and accountability lie with all levels of the government, it is monitored by Central and provincial government.
Initially, at the onset of COVID-19 pandemic and the lockdown, reporting status was impaired, but eventually the use of virtual platforms was increased and the partners working in Maternal and Newborn health came together to mitigate the impact of COVID-19. As a result, two rounds of assessments were conducted to identify the causes of maternal mortality. The biggest challenges in successful implementation of MPDSR are dedicated HR and financial resource for scale up and expansion of MPDSR program. The expansion and scale up process is not up to the national implementation plan because of lack of funds. The cost of scale up per district is 30 - 40 lakhs per year, and because of diversion of funds to COVID-19 activities leading to reduction in budget, scale up has been hampered.

4.4.3 Province

At province level MPDSR is being implemented and scaled up as guided by National implementation plan, mobilizing the financial and technical resources allocated from the Government of Nepal (Federal government) incorporating the feedback and inputs received from center. MPDSR guidelines and tools are followed for conducting the maternal and perinatal death reviews and response and to identify the cause and underlying factors leading to death. If the death of a mother occurs at home, FCHVs notify the death to the concerned health facility at local level, the health facility then sends a nursing staff to screen for maternal death and team including staff nurse/PHN from health office and municipality health section conduct the VA to find the cause of death and underlying factors for delays following which the MPDSR committee reviews the case and responds to the cause of death.

Availability of Trained HR in MPDSR is the key to success. Provincial health training center is coordinating and following with the National Health Training Center to train and retrain the existing human resource for implementing and scaling up quality health services in the

province. Pre-service training curriculum has been updated and developed for nurses and medical graduates and coordinated to respective authorities for approval for implementation.
Action plans are developed and implemented as per the recommendations of MPDSR committees and monitored. Some examples include: provision of free Air lifting services in Gandaki province, free ambulance service to and from hospitals to pregnant mothers for obstetric emergency in Rupa municipality, arrangements for blood transfusion and logistics supply in hospitals by Provincial logistic management center. Maternal mortality is decreasing due to quality MNH services along with effective and responsible referral mechanism with a coordinated partnership among stakeholders.

Contribution of WHO is significant at the Central level with technical support and dedicated HR for MPDSR, at province level WHO SRHR officer provides technical support for refresher trainings, onsite coaching, research, assessment and study, monitoring and review meetings. Some of the major challenges in MPDSR are to conduct VA, assign a cause of death and carry out response activities. Other challenges faced in this province are: overcrowding of hospitals with inadequate human resources and financial resources, lack of timely and effective referral mechanism, lack of motivation and accountability and sustainability. There are challenges in coordination among stake holders of MPDSR, lack of interests and motivation also complicates the implementation process. If a mother dies in the hospital, conducting VA will be another big challenge because of lack of coordination among players involved in the MPDSR process.
Advocacy and policy dialogues with Leaders of LLG may be an opportunity for community MPDSR program in the federal governance structures.

Health Monitoring & Evaluation committees were established in all seven provinces in 2019, with support from WHO. One day orientation program was conducted and one of the elements specified in the TOR is to monitor MPDSR implementation. This forum can be utilized to strengthen MPDSR at sub-national level with support from WHO PHO based in provinces.

Since the past year, the Family Welfare Division, Department of Health Services has requested all the 753 municipalities of Nepal to report maternal deaths. The MPDSR implementing districts are required to report through the web-based reporting system. The districts that are not implementing MPDSR report directly by email to the Family Welfare Division. In addition, community based MPDSR has been prioritized in the upcoming plans and programs by mobilizing nurses, who were trained for the post-census Maternal Mortality study of 2022, to conduct VA.

4.4.4 Federalization

As mandated by the Constitution 2015, Nepal adopted a transition to federal democratic republic with three tiers of government – local, provincial and federal with 753 local levels, seven provincial governments, and one federal government. This transition facilitated decentralization of development benefits and made government service delivery more effective and accountable. However, the challenges of jurisdictional overlap among the three tiers of government, lack of clarity and coherence in policies and devolved powers, reducing duplication of efforts, and enhancing the capacity of the government remain the key issues.

In MCH service delivery, federalization added another layer making the system accountable for each woman. However, the line of command was further diluted. The MPDSR mechanism and the training package were reformed to adapt to the federalized structure. The Program Guidance Document of Maternal and Perinatal Death Surveillance and Response – 2078 outlines MPDSR activities at each level.

A number of challenges were also faced in executing MPDSR following the federalization. Earlier, the program managers at local level were trained PHNs specifically for RMNCAH but now they are the focal points for all health programs. MPDSR - trained personnel were adjusted at subnational levels of Governments and new recruitments resulted in officials with limited capacity and wider scope leading to difficulty in capacity enhancement.

4.4.5 Management Guidelines

Numerous guidelines, standards, etc. on RMNCAH have been developed by FWD. The maternal care guidelines were developed in 2019 and National Medical Standards are also available. UNFPA supported FWD in developing guidelines to cover major reproductive health morbidities, which were printed and distributed by FWD to all hospitals. Some of the guidelines are also available on the FWD website.

WHO facilitated the development of antenatal and postnatal care guidelines in 2022. They were endorsed by MoH and orientation programs on available guidelines were initiated by FWD. The national guidelines and available protocols should be the basis for Maternal and perinatal deaths reviews in order to maintain a generic standard. This is crucial in objective audit of index case and a generic standard could be maintained throughout the country. However, the dissemination and adherence to such guidelines are problematic. The death reviews at present do not utilize or compare the care received by the index case in line with the available guidelines.

4.5 Contribution from Health Professional Societies

A. Nepal Society of Obstetricians and Gynaecologist (NESOG)

NESOG was established in 1989 and operates as an independent, non-profit oriented professional organization. Its objective is to work with the government, NGOs and INGOs to uplift the status of reproductive health of Nepalese women. NESOG constitutes of nearly 600 members and fairly represents the obstetrician community of the country (Nepal has around 900 obstetricians). An executive committee is elected for a tenure of two years. The composition of NESOG executive committee is dynamic and its contribution to national level activities has not been consistent.
Sister organizations of NESOG are established in three provinces and there are plans to start sister NESOGs in other provinces as well.

In 2005, NESOG actively supported the launching of MPDSR. NESOG representatives attended workshops and started organizing training workshops. However, the implementation was not smooth throughout.
NESOG directly and its members indirectly were involved in developing national guidelines on reproductive morbidities. Wallcharts, posters, and care algorithms were formulated jointly with FWD. They are available on the FWD website. National Standards were done in 2021. Inputs were provided to antenatal & postnatal guidelines and in obstetric emergencies. MPDSR is high in the agenda of NESOG for the next 2 years.

Issues:
NESOG does not receive the findings of MPDSR-related activities either from hospitals or FWD. There is no existing formal communication modality for this effect. MPDSR is not a fixed agenda item nor a priority of NESOG executive meetings. Moreover, some of the members are foreign graduates and are not knowledgeable about the MPDSR process. “No name, no blame” modality is not properly practiced. Anonymity is not properly maintained as some hospital authorities pressurize to put names of clinicians in the forms. This has led to hesitancy among many clinicians to fill in the forms. Individual families also influence management teams. Legal indemnity is not yet facilitated for MPDSR-related activities. Role of Medical Council is not known. Although national guidelines wallcharts etc on care are available, they are not available at ward level. Quality of CoD ascertainment in VA is not up to the standards. NESOG perceives that this should be done methodically by a qualified person. PDSR is lagging behind. The perception is that MDs are more important than PNDs. A view is held that monthly PDSRs are not practical in some hospitals. Many of the clinicians are not trained in PDSR. A hesitancy from clinicians is noted. Response component is also weak. Federalization has changed the line of command and in the present context only advocating can be done for subnational levels.

Strengths:
NESOG can play an influential role in improving and scaling the MPDSR. GoN should take the leadership in scaling up and NESOG could support a national level desk review of maternal deaths.

WHO has been providing technical and financial support to NESOG in its annual conferences. NESOG perceives that WHO is the backbone of MPDSR in Nepal and has been supporting the GoN to implement and institutionalize the MPDSR program. However, WHO also has its own limitations in going beyond the provincial level. Other development partners should also be engaged in this endeavour. WHO’s support in MPDSR should not be withdrawn. It should rather be enhanced to support the GoN to sustain and scale up MPDSR for a few more years.
Following suggestions are made to WHO:

1. Should advocate to other EDPs also to engage in MPDSR.
2. Should penetrate both federal and provincial levels and support provincial and district level MPDSR review process with active participation.
3. MPDSR mechanism should be revisited and modified especially the case formats. The SEARO modality should be adapted.

4. MPDSR training should be decentralized, starting from bigger hospitals then cascading to peripheral hospitals.
5. Should support revision / update of national guidelines on maternal care.

The leadership of NESOG will envisage following actions with regard to improvement and scaling up of MPDSR in the country;

1. To make members aware of the existing MPDSR mechanism and the need for prioritize this program.
2. To include MPDSR in related medical undergraduate curricula and other pre-service curricula (eg. Nursing and midwifery)
3. To appoint an independent representative from NESOG at MPDSR review meetings. Sister organization PESON can be requested to nominate experts. Politically, this will not be easy.
4. To promote the Safe Delivery mobile-based app.
5. To promote conducting postmortems on maternal deaths.
6. To strengthen the response part of the PDSR
7. NESOG to take a lead role in strengthening PDSR along with MoH and development partners.

The NESOG members in hospitals believe that it has the power to influence and convince the need of MPDSR to its membership. Some key informants rate that NESOG is less political and more technical. However, the enthusiasm for MPDSR would depend on the composition of the executive committee and individual interests. They believe that NESOG should be a strong partner in MPDSR but its capacity, awareness and understanding on the seriousness of MPDSR should be improved with WHO support.

B. Perinatal Society of Nepal (PESON)

PESON was established in 1997, as a professional organization of Obstetricians, Pediatricians, Senior Nurses, Senior Public health and allied professionals. It is governed by an executive body elected every two years. PESON currently has a membership of around 200 members. Its main objective is to contribute to reducing maternal and newborn mortality and morbidity in the country. PESON coordinates and collaborates with government, non-government and professional organizations on maternal and newborn health.

The President-elect PESON perceived that it has been working quite closely on MPDSR. A master program was done in 1995. PESON representatives used to visit hospitals to review PNDs from 1997.

PESON is concerned that NMR has not reduced over the last 6 years. For a significant reduction, the country now needs level 3 & 4 care in all provinces. PESON is working with GoN to reduce PNDs and NMR. Kangaroo Mother Care (KMC) was started in 2001 and in 2003, Perinatal death surveillance was integrated with Maternal Death surveillance with structured formats. The forms were filled in by medical and nursing officers and deaths were classified with

Wigglesworth classification. Deaths were reviewed and actions were undertaken. This led to the initiation of a second on-call night duty roster for medical officers, postgraduate program on neonatology and quality improvements in neonatal care. PESON believes that MPDSR has connected obstetricians and paediatricians all over Nepal. This platform should be utilized to further reduce PNDs in the country.

PESON stresses the need for the latest data. Most of the PNDs occur in the referral centers. They should be given the ownership of data. PESON recommends appointing a focal point for each hospital to originate and coordinate PND data.
PESON is willing to provide resource persons in MPDSR training. Trainings should be conducted in at least 20 medical colleges.
Occupancy rate for neonatal care at hospitals is low. Free Newborn care program was started since 3 years back in government hospitals. Most government hospitals provide only level 2 care. This has to be scaled up in all sectors including the private sector. In private hospitals, adequate HR is available, and they can provide up to level 4 newborn care.

C. Nepal Paediatric Society (NEPAS)
NEPAS is the professional, non-profit making, social welfare organization of the paediatricians of Nepal committed to strive for the overall development of the children of Nepal. This professional body was established in 1981. Society has contributed to the development of community child health by endorsing child health policies, strategies and interventions developed by WHO, UNICEF, USAID and other agencies working in the field of child health. NEPAS has not been involved much in MPDSR in the past. However, it can play a leading role in PDSR as most of the paediatricians are members of NEPAS. GoN should take MPDSR forward with the support of medical colleges.
The efforts of the evaluation team to interview an official representative from NEPAS did not materialize.

Professional colleges are not involved in provincial level MPDSR. Provincial chapters of NESOG / PESON are not registered.

4.6 Support from External Developmental Partners

A. Nepal Health Sector Strategy Program (NHSSP)
NHSSP has been working with the Ministry of Health and Population since 1997. This program is supported by the UK government under UKaid. There were three phases of NHSSP, phase 1,2 and 3. Phase 1 ended in 2010 following which the Nepal Health Sector Support Programme – 2 was implemented from 2010 – 2015 and with the success and learning from it the Nepal Health Sector Support Programme 3 has been in operation between April 2017 and December 2022. The aim of this programme is to support the delivery of the Nepal Health Sector Strategy (NHSS), 2015-2022 of the MoHP. This organization supports policy level II implementation.

In SMNH road map 2030, NHSSP supported the safe motherhood road map to federal government in 3 provinces and 30 local bodies. In conjunction with other EDPs, NHSSP works at

federal level with FWD to implement SMNH road map at all palikas from planning to implementation level. In phase III, WHO has assumed the lead role in MPDSR, but NHSSP is also supporting the MPDSR activities. NHSSP team visits health facilities and there is a quality and coverage coordinator at provincial level.

During the COVID-19 pandemic, the FWD mandated compulsory reporting of all maternal deaths and active support was sought from EDPs. Provinces were allocated to EDPs and NHSSP was allocated to coordinate in three provinces; Madhesh, Lumbini and Sudur Pradesh provinces. NHSSP facilitated the distribution of MDR and PDR formats to health facilities in three provinces and followed up on data capture during COVID-19 pandemic. Open Data Kit (ODK) mobile application was introduced, and its implementation was supported by NHSSP during COVID-19 pandemic and it included notification of maternal deaths from hospitals.
As per MPDSR data analysis during the pandemic, PPH was observed to be the leading cause of maternal deaths. As a result PPH bundle orientation package was developed and more than 300 healthcare workers were trained on the PPH bundle approach. NHSSP has the capacity to orient all 753 palikas on MPDSR under its supervision. NHSSP recommends that MPDSR should not be a separate program and it is high time for GoN to take over.

B. UNICEF

UNICEF initiated co-operation with Nepal in 1964. Its programme focus has continuously changed over the last 50 years to meet the changing needs of children, adolescents and women in Nepal. The UNICEF country programme of cooperation in Nepal (2018–2022) builds on the achievements and the good progress made on achieving the MDGs and will help realize the commitment of Nepal to achieving the SDGs. Two of UNICEF's main focuses are Survival of mothers and babies and Health system strengthening.

UNICEF is supporting FWD in policy and guideline formulation. It played a key role in Female Community Health Volunteer program in collaboration with USAid, UNFPA and WHO. It also supported the Safe motherhood program, ENAP, Newborn health strategy and MPDSR guidelines.
UNICEF supported the expansion of birthing centers in 2005. Birthing centers were established in health facilities (n=2000+) and managed by SBA (qualified nurses). This helped in reducing maternal deaths. At present, birthing centers function at strategic locations. UNICEF's support is shifting from community-based approaches towards hospital sector as stillbirths, neonatal deaths and maternal deaths are now more concentrated in hospitals necessitating in improving the quality of care at facility level.

UNICEF supports in four provinces: Lumbini, Madesh, Karnali and Sudurpaschim. The local levels (municipalities) in the districts identified as most deprived according to the Child Deprivation Index (2015) receive multi-sectoral assistance from UNICEF provided in a coordinated way. UNICEF commits support through RED book -in consultation with government partners. The release funds to MoH is by direct cash transfer. As there are UNICEF staff at provinces, UNICEF may be able to support the provinces directly through the provincial RED book.

MPDSR is high in the agenda of UNICEF activities. It has become one of the priorities in the context of strengthening the quality of care. In the 1990's, UNICEF was represented in committees, but they did not play any leading role and no financial support was provided for MPDSR. In 2014/15 -UNICEF was technically involved in MPDSR guideline development. In 2016, when community-based MPDSR was initiated in a few districts (Baitadi, Jumla and Mugu), the rollout including training and implementation was executed by UNICEF jointly with FWD and WHO. In 2018/19, review meetings on MPDSR were conducted at provincial and central levels. A two-day review was done in federal hospitals, and UNICEF provided financial support to FWD and was involved in organizing the agenda, resource persons, technical presentations and new guidelines. UNICEF was involved in strengthening MPDSR in priority districts and in the activation of MPDSR committees. The UNICEF health officers helped to strengthen the MPDSR by supporting the service providers to fill in the MPDSR forms and VA forms through hospital and community visits. There is no objective way to ascertain whether UNICEF achieved the expected outcomes for its investments in MPDSR. It is high time to assess the performance of four provinces with available MPDSR data to see whether there has been a reduction in MMR or PMR.
During the COVID-19 pandemic, UNICEF supported in maternal death reviews and counting deaths in selected hospitals. Technical and financial support was provided for conducting workshops to revise the MPDSR guidelines.

'P' in MPDSR is challenging even for UNICEF. Not much has been invested in it and its performance is not up to the mark. UNICEF is planning to scale up Jhpiego's MPDSR strengthening program and also suggests simplifying the forms and improving the response mechanism. If WHO support is withdrawn, FWD would not be able to sustain MPDSR in the background of federalization. The intervention should be at each local level (municipality). MPDSR committees should be activated. A monitoring and evaluation modality should be introduced. The rule of regional office is for a criterion MPDSR. Up to now, UNICEF has had no MPDSR-dedicated funding resources. However, UNICEF could play a much bigger role, proactively support and work harmoniously with WHO in scaling up MPDSR. UNICEF would take the lead in 'P', perinatal part of MPDSR. However, the federal governance structure would be a challenge for UNICEF.

In addition to the above EDPs, USAID (SSBH) is supporting MPDSR strengthening in Karnali and Lumbini provinces and One Heart Worldwide is supporting in Madhesh Province. Both these organizations are operative on the ground.

4.7 WHO Contribution

The contribution provided by WHO has been significant in initiating and strengthening MPDSR in Nepal. From the start, MPDSR was entirely led and supported by WHO. WHO's enormous involvements and contributions are reflected in all previous sections. WHO's role encompasses a spectrum not limited to just technical and financial support for MPDSR implementation and

capacity building, but also in monitoring of implementation, implementation support, normative and guidance and horizontal collaboration.

WHO Biennium operational plans 2011 – 2022 were mainly focused on skills and competencies of skilled birth attendants. MPDSR was also included. MPDSR has assumed a priority activity in WHO work plans. WHO NPO – RMNCAH is leading the project. MPDSR related activities included in WHO Biennium operational plans are listed in table – 7.

Table – 7

MPDSR Activities in WHO Biennium operational plans (2011 – 2022)

Biennium	**MPDSR Activities**
2011/12	MPDSR started with pilots
2013/14	
2015/16	MPDSR built within COIA roadmap
2017/18	National MPDSR
2019/20	MPDSR program expansion in hospitals and community
2021/22	MPDSR program expansion in hospitals and community

An increasing support was observed over the years on MPDSR from WHO. A breakdown of the activities and funds utilized specifically for MPDSR 2019 – 2023 is shown in table – 8.

Table – 8

Activities and funds utilized for MPDSR 2019 – 2023

Award Short Name	Award End Date	Top Task Short Name	Planned Cost	Award Budget	Encumbrances	Expenditures	Utilization	Balance Available
VCC F SEARO CVCA 2018-19	31-DEC-19	311C1 Imp qulty care	172,179	42,006	0	38,714	38,714	3,292
		312C1 Improved RH -	67,525	4,350	0	4,350	4,350	0
AC2 F SEARO AC 2018-19	31-DEC-19	311C1 Imp quality care		121,613	0	121,309	121,309	304
		312C1 Improved RH -		40,716	0	40,622	40,622	94
		Total	239,704	208,685	0	204,995	204,995	3,690
AC2 F SEARO AC 2020-21	31-DEC-21	MPDSR BD POCQI - Dev	99,974	54,974	0	52,126	52,126	2,848
VCC F SEARO CVCA 2020-21	31-DEC-21	MPDSR BD POCQI - Dev		42,491	0	40,850	40,850	1,641
		Total	99,974	97,465	0	92,976	92,976	4,489

CVC F SEARO CVCA 2022-2023	31-DEC-23	MPDSR BD POCQI	84,000	55,000	0		0	55,000
AC2 F SEARO AC 2022-23	31-DEC-23	MPDSR BD POCQI		30,000	50,001	54,496	104,497	-74,497
		Total	84,000	85,000	50,001	54,496	104,497	-19,497
						352,467		

A WHO NPO is also placed at the FWD specifically assigned to work on MPDSR and birth defects surveillance. These official covers; facilitating technical support, resource allocation and coordination for training and central level data monitoring including compilation and analysis of MPDSR.

Box – 1 summarizes the WHO technical monitoring of all tasks for selected expected results of WCO for the biennia 2018-19 and 2020-21.

Box – 1

Technical Monitoring - All Tasks for Selected Expected Results

Biennium : '2018-19' , Major Office : 'SE' , Budget Center : 'SE_NEP
311C1 Imp qulty care - 311C1 Improving the quality of care for maternal health through strengthening of Maternal and perinatal death surveillance and response (MPDSR) and incorporation of new WHO guidelines related to maternal health.
Award Budget – 145,039 USD

Progress Overview:
Ensured the quality implementation of MPDSR in 11 districts and 77 Hospitals. Strengthened Network on Newborn Birth Defect among MoH and 16 Hospitals.

- Review workshop at provincial levels for participating hospitals – completed.
- On site coaching of District MPDSR team - completed
- Improved online data entry in both maternal & perinatal deaths – ongoing.
- Training for the 16 NNBD hospitals on birth defect and still birth surveillance in hospitals – completed.
- Strengthening the web-based reporting system in line with federal context and integration with DHIS 2 - ongoing
- Preparation and dissemination of MPDSR report for the past 3 years – ongoing

Biennium : '2020-21'
Project Name: NEP_SP1&4 (UHC, HIS & Research)
MPDSR BD POCQI - Develop integrated approach for quality improvement of Maternal and Newborn adopting MPDSR, BD surveillance and POCQI and support their implementation.
Award Budget – 69,974 USD

Progress Overview:
WHO supported MoHP to review maternal deaths that occurred during COVID 19 pandemic, disseminated the findings and supported in response with orientation of service providers on PPH.

ICD MM classification for maternal deaths included in the revised MPDSR guideline, forms and the web-based system. MPDSR training package revised for hospital and community. Regularly monitoring and analyzing maternal and perinatal deaths and Birth Defect at the hospitals and community. Supported in SEAR online training on MDSR and BD Surveillance. DFC support to FWD on Provincial level policy dialogue and trainings on cause of death assignment from verbal autopsy for medical doctors.

Key Performance Indicators (KPI) for leading output 1.1.K CO: Standard operating guidelines on MPDSR developed/updated for the years 2018 & 2020 are reported as Red and Green respectively. KPI output 1.1.K MPDSR full implementation in the country for the year 2022 is reported as "green" indicating the country-level operation of the MDSR in full scale.

The country narrative Business Center Report (BC report) of Nepal for the biennium 2020/21 states "National MPDSR guidelines and tools were revised and endorsed from MoHP" under the major products achieved in change in policy and increase in political commitment/ guidelines & protocols. It also reports that WHO played a key role and provided technical and financial support in Maternal and Perinatal Death Surveillance and Response (MPDSR) during COVID-19 pandemic. In addition, WCO has supported in orientation of 344 service providers throughout the country on MPDSR to improve recording and reporting of maternal and perinatal deaths as well as plan and implement action plans to improve the quality of maternal and newborn care and move towards achieving SDG goals.

WCO has facilitated a country implementation plan in August 2022 to strengthen the MPDSR system with the involvement of key players (Table – 9). Many of the activities are in the pipeline to be implemented and completed in 2023.

Table – 9

MDSR country implementation plan

SN	Activities/Action	Resources Needed	Responsibility	Starting date	Target Completion date
1	Factsheet on MPDSR for the Fiscal year	TA from WHO-CO	FWD, WHO	July 2022	September 2022
2	Orientation to scale up MPDSR in all Government and major private CEONC sites	TA and FA from WHO-CO, MCGL, UNICEF	FWD, Province, Hospitals	October 2022	June 2023
3	Orientation to scale up community MPDSR in 11 districts	TA and FA from WHO-CO, MCGL, UNICEF	FWD, Province, Districts and Local levels	October 2022	June 2023
4	Adaptation to global MPDSR capacity building package and translation into Nepali	TA and FA from WHO-CO, MCGL, UNICEF	FWD, Development partners in RH	September 2022	June 2023

In addition, an MPDSR action plan has also been developed (Table – 10) by WCO.

Table – 10

MPDSR action plan

Modifiable Factors	Actions	Responsible person/Dept/Org	Time frame	Follow up progress
MPDSR program strengthening	Prepare a pool of facilitators at center level	SEARO/MCGL/FWD	10 months	
	Orient policy makers at each province	FWD and partners	12 months	SEARO
	Prepare a pool of facilitators at province level	FWD and partners	18 months	FWD
	Emphasize on combined death review at MPDSR implementing hospitals	FWD and partners and hospitals	continuous process	FWD
	Re-orient PHN/PHO/MPDSR focal person in MPDSR implementing districts	FWD, MoSD / MoHP, Palikas and Partners	18 months	FWD
	Regular monitoring and supervision to ensure response implementation (using checklist)	Hospitals, Palikas, PHD	Every trimesters, effective immediately	Province (PHD) and FWD (Joint follow up monitoring)
	MPDSR data analysis and response at central level	FWD and partners	ongoing	FWD
	Formulate response plan at central level based on data findings	FWD and partners	ongoing	FWD
	Follow-up to ensure response are implemented at central level	FWD	ongoing	FWD
	Integrate MPDSR to HMIS	FWD and HMIS	12 months	FWD/ MoHP
	Development of MPDSR Onsite coaching and mentoring guideline	FWD and partners	2022-2023	FWD
MPDSR program expansion	Hospital-MPDSR expansion in 7 CEONC sites	FWD,MoSD/MoHP, palika and partners	12 months	MoSD, MoHP, DoHS
	Community-MPDSR expansion in 11 districts	FWD,MoSD/MoHP, palika and partners	10 months	MoSD, MoHP, DoHS

* Coordinate with MNH section, QI unit, Data unit, partners

Regional Work / Support

Maternal and Child Health (MCH) is a foremost pillar of WHO. The main focus is on service-oriented MCH. MPDSR has been identified as a mechanism to respond in a rigorous way. Therefore, it needs focused capacity building.

In 2011 – 12 WHO initiated a Commission on Information and Accountability (COIA) for Women's and Children's Health, which proposed a framework for global reporting, oversight and accountability on women's and children's health. Through ten recommendations presented in its report "Keeping Promises, Measuring Results", the Commission has created a system to track whether donations for women's and children's health are made on time, resources are spent wisely and transparently, and whether the desired results are achieved. This had seven

pillars and MPDSR was one of them with assigned particular budgets. SEARO adopted the COIA strategies and facilitated the same in member countries in the region.

In 2015 SEARO introduced MDSR training materials to member countries at the Regional MPDSR Progress Review meeting in Maldives. Even before the regional meeting, Nepal had its own MDSR system with a verbal autopsy and a MCCOD system. The country plans for MPDSR Implementation 2016-2020 were formulated by the country delegates with the support of WHO – NPO (Annexure – 5).

In 2020, SEARO trained several officials from Nepal on MPDSR. In 2021, WHO SEARO initiated virtual MDSR capacity building workshops during the COVID 19 pandemic (Refer 4.3.3).

WCO received regional support for several MPDSR activities; Capacity building, MPDSR training (virtual), Development of guidelines and Adaptation of MPDSR tools (Funds – 50000 USD). Country support requests are articulated with HQ, evaluated at SEARO and revalidated at WCO level. Key Performance Indicators (KPI) are self-reported by WCO. MPDSR has been reported "Green" for 2022. If reported Green, no validation is carried out.

The SEARO Region endorsed the updated Global Strategy for Women's, Children's and Adolescent's Health 2016–2030. This was launched to mobilize global, regional, national and community-level commitment to maternal, newborn and child survival. The Region identified "ending preventable maternal, newborn and child deaths with a focus on neonatal deaths," as one of the eight Regional Flagship Areas for the Region to give it the attention and resources needed. A reduction of 57% of maternal mortality in the region is planned. An external evaluation for the SEA Region undertaken to assess the relevance, effectiveness and efficiency of WHO's role in the progress of and impact on these Regional Flagship Areas from 2014 to 2018 shows that Nepal and other member countries have adopted and developed guidelines and policies to accelerate progress in this flagship areas with support from WHO (39).

The Country Cooperation Strategy (CCS) is a strategic document developed synergistically with member states to guide WHO's work in them. CCS is a medium-term vision for WHO's technical cooperation, and supports the country's national health policy, strategy or plan. The CCS outlines how WHO can support the Ministry of Health and other allied organizations to drive impact at the country level. WHO's planning is piecemeal. The Policy and Planning Unit at SEARO level supports countries in developing work plans. CCS is only a strategic document. Nepal is on the verge of developing a new CCS. Specific examples are given by WHO. This needs to be aligned with MoH strategy. CCS provides a strategic roadmap for WHO to work with the GoN towards achieving its health sector goals, for example MCH including MPDSR, for next 5 years in improving the health of its population and bringing in transformative changes in the health sector. SEARO is the only regional office, and 80% of funding goes to country level. For the biennium 2022/23, no support requests were made on MPDSR by WCO.

WHO faced several challenges in this area at the level of inputs, processes, outputs, outcomes and impact. The government commitment was not consistent with the WHO agenda. The

program was solely executed by WHO for a significant period in the initial stages. Lack of and rapidly changing human resources at central level was a challenge. A designated government focal point on MPDSR even at present is not available. Although there were multiple training programs conducted, trained personnel were adjusted in provincial and local level institutions and are transferred frequently. A proper handover system is not in operation. Program could not be scaled up as expected due to multiple factors beyond the control of WHO. There were numerous different competing central and provincial priorities, level of ownership and understanding about MPDSR. Federalization posed numerous challenges. The guidelines necessitated revisions to cater for the federalized structure. The line of command was diluted, and direct financing was limited.

WHO also influenced at the policy level to establish mainstreamed plans to incorporate MPDSR into health systems. The National Health Strategy (2016 – 2021) and upcoming issue also includes MPDSR as an item. The strengthening and expansion of MPDSR is a key activity. The plan for the next five years is being developed in a joint venture with other development partners. RMNCAH section includes MPDSR.

MPDSR also played a pivotal advocacy role for national level strategies. The Safe Motherhood and Newborn health Roadmap 2020 – 2030 to reach SDGs was developed with inputs from MPDSR. It also paved the way for the national maternal mortality study in census 2021.

4.5 The outcome of MPDSR

With more than 32 years of history and efforts since 1990, Nepal has reached several achievements targeting a fully established MPDSR mechanism in the country. The current status of the MPDSR is well illustrated in the Mapping of implementation of MPDSR system (Annexure – 6) prepared by the WCO in August 2022. Almost all key elements of MPDSR eg. Formation and functioning of MPDSR committees, case identification and Notification, review process and determination of CoD, periodic analysis of data & dissemination and formulation of recommendation & implementing actions have been introduced. However, the operationalization of them at different levels, including at the central level have been problematic. The Preparatory phase questionnaire - Nepal on Maternal and Perinatal Death Surveillance and Response (Annexure – x) also provides objective insights into the situation of maternal and perinatal mortality and the MPDSR implementation in the country.

MPDSR is operative in 94 hospitals (in 58 districts) and community MPDSR in 27 districts (out of 77) and not implemented nationwide. National Guidelines on MPDSR are available describing all steps of the MPDSR cycle. They also include MPDSR committee establishment, function and defining roles and responsibilities of members of MPDSR committees at various levels. The functionality of the national MPDSR committee remains unclear. Even at facility and community levels, although the MPDSR committees have been established, their operationality is not regular. Objective information on active MPDSR committees, number of health facilities or districts actively contributing to MPDSR process are not readily available.

For case identification and notification, maternal and perinatal death definitions for notifications are compatible with WHO definitions. Many of the facilities are notifying MD within 24 hours. Most of them notify through the Viber platform created for this. It is not clear whether clear-cut mechanisms are available to actively identify MDs that occur in non-obstetric ward settings. Community MD are required to notify within 24 hours. However, this is suboptimal. Most of the facilities do zero reporting of MDs in the perinatal death review summary form. The practice of ICD MM in MDSR was introduced in 2021 and MDs are classified into ICD MM categories. One element of MPDSR training is on ICD MM. The revised forms are aligned with WHO MCCD form with a detailed case summary and a pregnancy check box.

Stillbirth and early neonatal death definitions for notifications are compatible with WHO definitions. Although, facilities do not notify PNDs within 24 hours, individual PDR forms are filled within 72 hrs of death and entered in the monthly PDR summary form in the web-based system. The revised PDR form includes classification of perinatal death using ICD-PM codes. Regular trainings are conducted for hospital doctors, MPDSR review panel and MROs on ICD PM. From most of the MPDSR implementing facilities, zero reporting of PNDs is done. It is noteworthy that staff involved in MPDSR use clear criteria and a standard classification system in ascertaining cause of death in both MD and PNDs. However, the accuracy and quality of such CoDs have not been assessed.

Considering the feasibility of follow-up data flow from central level, the case ascertainment formats include patient and service provider's identity. De-identification takes place during the analysis.

The use of technology to support data monitoring and analysis is not up to the standard level. The current MPDSR system is not capable of computing national maternal and perinatal mortality indicators. Triangulation of maternal and perinatal death data from different sources do not take place at present. However, mortality estimates provided by NDHS, UNMMEIG and Post Census National Maternal Mortality Study- 2021 are being utilized.

A key aim of the MPDSR is to produce latest maternal and perinatal mortality data and indices for the country. The following graph (Figure – 8) shows the number of reported maternal death records available in the web-system from 2019 – 2022. This is well below the estimated number of maternal deaths for the country (n=1100) and its representativeness of the country's situation is questionable.

Leading causes of reported maternal deaths are obstetric haemorrhage, hypertensive disorders of pregnancy and pregnancy-related infections. Cause of death profile of the reported maternal deaths are depicted in the Figure – 9.

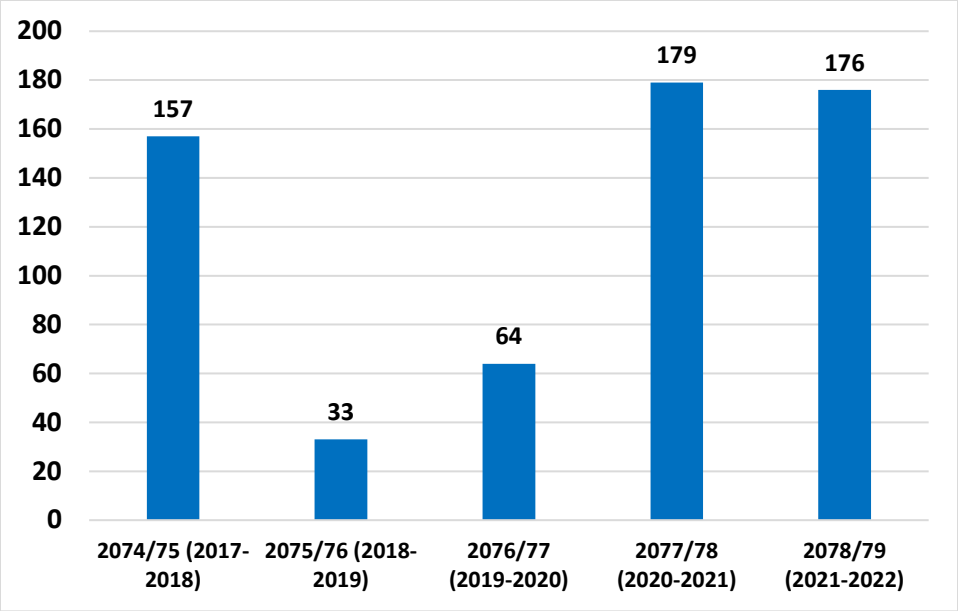

Figure – 8

Number of reported maternal death in the web-system from 2019 – 2022

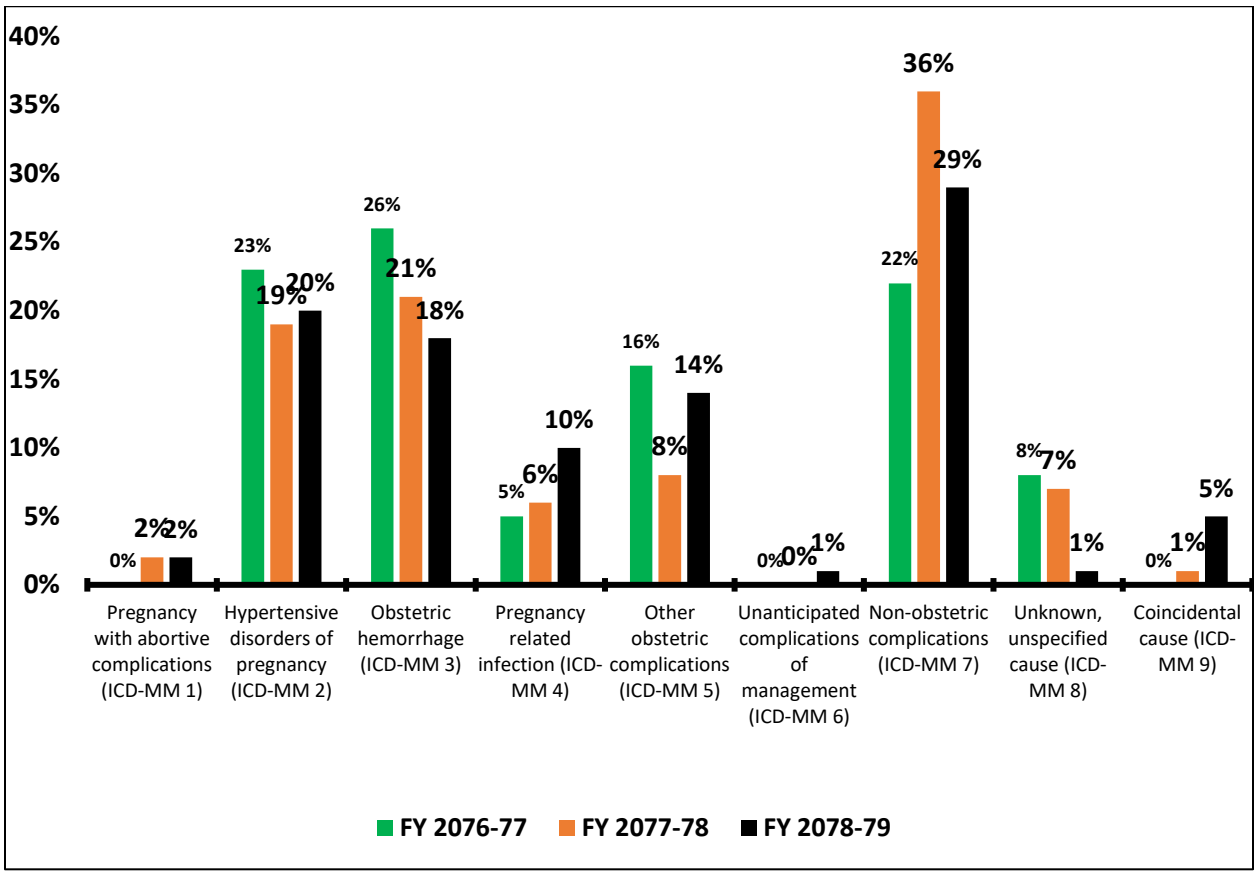

Figure – 9

Cause of death of the reported maternal deaths (2019 – 2022)

The number of Perinatal Deaths available in the web-system are as follows; 2076/77: N= 558 2077/78: N= 1004, and 2078/79: N= 1480. Leading causes of PNDs were; complications of prematurity, birth asphyxia, congenital anomalies and infections (Figure – 10).

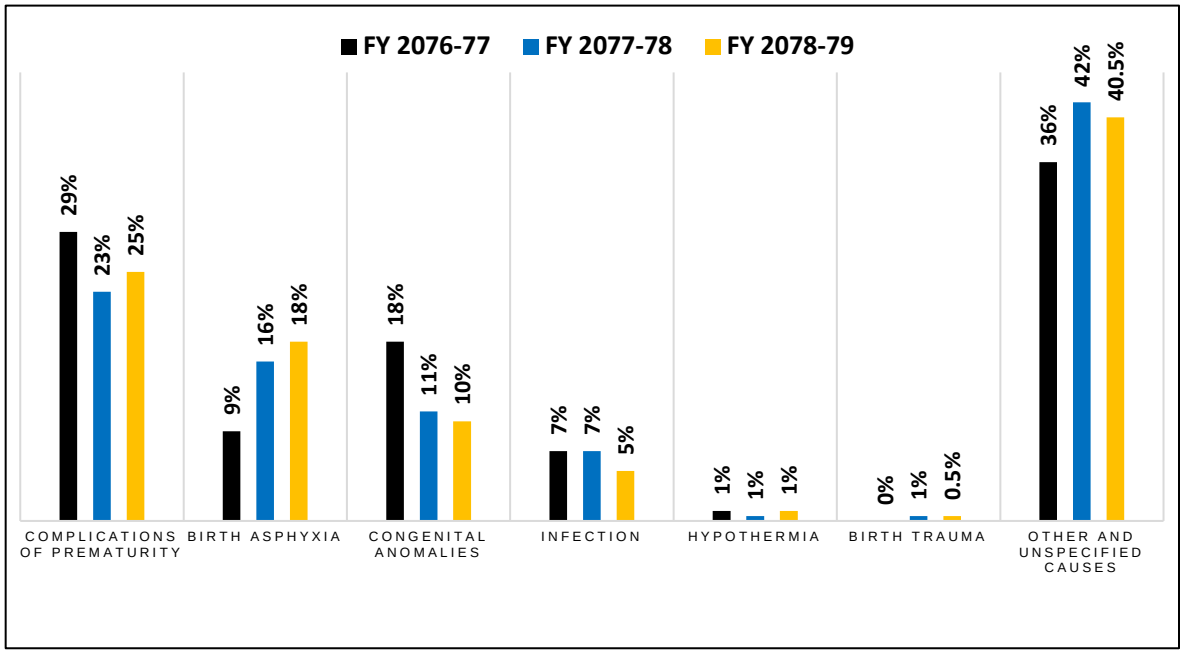

Figure – 10
Cause of death of the reported perinatal deaths (2019 – 2022)

The country's perinatal mortality in 2016 was 31 per 1000 total births. The neonatal mortality rate for the five-year period (2011 – 2015) is 21 deaths per 1,000 live births (40). In the context of unavailability of a latest national perinatal mortality rate, and estimated 19000 perinatal deaths, available data in the MPDSR system does not give an accurate picture of perinatal mortality in the country.

Gaps are observable in identifying delays and modifiable factors during the analysis of maternal and perinatal deaths. Review atmosphere is gradually adopting "no-name" "no-blame" culture. Recommendations are formulated following the case reviews however not always in SMART modality using a standard format. A uniform meeting report template is not available to record minutes and recommendations. A consolidated report of recommendations is not developed to review the progress of implementation and there is no specific mechanism to share summary of recommendations with higher levels. The 'response' component is not performing well. It does not engage key stakeholders, adopt evidence-based interventions nor involve all levels of the health system officials at different time points. This study could not elicit how response mechanism operates or who is responsible for executing and monitoring the progress of implementation at each level. Information on key policy and other level prevention strategies executed are not readily available.

4.6 Evaluation - WHO involvement in MPDSR in Nepal

WHO has executed the all the pioneer work in establishing a comprehensive MPDSR system in Nepal starting from the year 1990. If not for the WHO's extensive engagement and continuous support, an MPDSR system of current scale would not have existed in the country. The multifaceted involvement of WHO has immensely contributed to the maturation and reshaping of the system throughout its evolution. Box – 2 summarizes the key WHO involvements in the implementation of MPDSR in the country.

MPDSR has assumed a key area of WCO and WHO SEARO agenda. WHO has extensively contributed to sensitizing the government, developing guidelines, MPDSR training, progress reviews, central level monitoring and mobilizing other partners. Until 2014, MPDSR was entirely led and supported only by WHO. As a result, Nepal can boast of having an MPDSR system with all elements although not at optimal level.

It is clearly evident that MPDSR system has matured over the years adding new dimensions periodically with the technical guidance of WHO. The support aligned with WHO guidelines and almost all steps of MPDSR such as identification of deaths, review process, ascertainment of cause of death using ICD MM/PM classifications, pregnancy checkbox in death declaration form and use of MCCD in verbal autopsy were in line with WHO specifications. WHO's presence and engagement in strategic points; initiation, restructuring in 2016, training and during the COVID-19 pandemic have been crucial. When the government commitment and finances to sustain the program were limited, WHO took the leadership to establish a totally new process in the healthcare delivery system. WHO continued to support strengthening the capacity of staff at all levels to conduct MPDSR. This included training on the MPDSR method in facilities and community level, and training for members of MPDSR committees, maternal and perinatal death classification (using ICD-MM and ICD-PM) and formulating recommendations. All of them improved the quality of the system over the years. The response mechanism did not evolve as expected. Available evidence amply reflects that systems strengthening and linking findings in the decision-making process facilitated by WHO improved the MPDSR in Nepal.

WHO's engagement is usually limited to policy and strategic levels. In Nepal, WHO has penetrated even into the implementation. A dedicated WHO official has been positioned at the FWD to coordinate and monitor the MPDSR since 2016. In a background of limited government human resources, activities of MPDSR have been entrusted with the WHO officials. This position has been crucial for the sustenance of the program because when the position was vacant during 2019 – 20, all the quality parameters of the MPDSR were not optimum.

Box - 2
WHO involvements in the implementation of MPDSR in Nepal

1990	Initiation of Maternal Death Review (MDR) mechanism as completely a WHO program.
2003	Development of Guidelines on Maternal Death Review, revised the review process and incorporated Hospital Perinatal Death Review (PDR) component.
2006	Implemented the MPDSR in six hospitals across the country.
2012	WHO facilitated a dedicated meeting to restructure the MPDSR program. A technical working group (TWG) was established. WHO covered the implementation of MPDSR at maternity hospitals as a demonstration project to FHD. Program was expanded into 5 more hospitals to achieve a total of 21 hospitals. Only WHO dedicated the funds.
2014	WHO led launching of Commission on Information and Accountability (CoIA). MPDSR was reviewed. Technical support was mainly from WHO. WHO facilitated a hands-on exposure training on MDSR in Sri Lanka.
2016	WHO MPDSR Regional Meeting: SEARO introduced MDSR training materials to member countries. Nepal prepared a country plan for scaling up.
2016	Community-based MPDSR was introduced in prioritized districts with WHO support. MPDSR trainings were commenced. WHO Verbal Autopsy questionnaire was used.
2017	WHO supported a web-based system for MPDSR. An orientation training package of MPDSR was developed. Program was expanded and number of trainings increased.
2018	A national MPDSR workshop was conducted with all provincial representatives. An action plan with a response mechanism was developed with support from WHO.
2020	WHO played a pivotal role during COVID-19 in sustaining MPDSR.
2021	ICD-MM and ICD-PM was incorporated into hospital MPDSR formats by WHO.
2022	ICD-MM was introduced to Community MPDSR.

WHO has made strong efforts to engage key players in the process of MPDSR. This includes policy level officials, professional groups and EDP partners. WHO influenced the policy level changes and, in partnership with other EDPs, national professional societies and other key players, guided the implementation of MPDSR at national and subnational levels. Their continuous engagement was supportive to the evolvement of the program over the last few decades.

The support has improved and impacted on several maternal death surveillance attributes including representativeness, data quality, acceptability, sensitivity etc. About one and half years back, the system did not generate quality data. FWD and WHO focal point initiated an active monitoring mechanism by calling the participating hospitals. By 2020, the number of reported MDs improved including zero reporting. There was no functional system to consolidate data. After expansion to more hospitals and districts, trainings and web-based system in 2016, reporting of cases was increased (Ref: MPDSR assessment report – 2019). This is reflected in the yearly breakdown of number of reported cases (Figure – 8). Central level monitoring lacks the authority and rigor for binding the participating hospitals and districts for receiving required data. The present data monitoring system seems to be haphazard.

At present, the MPDSR system covers about 70% of the facilities and 35% of the districts. This is a remarkable achievement in the context of multiple challenges from central to provincial levels. The fully institutionalization of MPDSR within the healthcare delivery system requires substantial engagement of all the stakeholders and will take some more years.

It is noteworthy that the additional contributions were largely attributed to WHO support. The death certification is not at a standard level in Nepal. Filling of death declaration forms for other deaths even for hospital deaths is not functional. MPDSR was remixed to death registration. Verbal autopsy and MCCD used for maternal deaths was instrumental in attributing CoD for other deaths at community level. The form used for MDs was adapted for other deaths and resulted in ICD coded death classification. It provided an impetus to CRVS. This is significant in the context of no fully-functional CRVS in operation.

The available estimations suggest that Nepal's maternal and perinatal deaths have reduced over the last decades. This may be largely due to the increase in antenatal care coverage and institutional deliveries. It could be speculated that WHO support for MPDSR has also contributed to the improved maternal and perinatal mortality indices. Considering the current level of maternal and child health service delivery in the country and potential effectiveness of MPDSR, it is possible to achieve the SDG targets if MPDSR is effectively implemented in Nepal.

4.6.1 Challenges that prevented full delivery of intended support and achieving expected targets

Policies and programs, even though adopted, are not always implemented as envisioned and do not necessarily achieve the intended results. WHO support has not been able to fully accomplish the expected program implementation targets. Implementation barriers can be rooted in a variety of causes, including diluted interest from key stakeholders, inadequate human or financial resources, lack of clarity on operational guidelines or roles and responsibilities for implementation, conflicts with other existing policies, lack of coordination and collaboration between parties responsible for implementation, or lack of motivation or political will (41).

Weak enthusiasm from the government and inadequate political will at the start of the MPDSR must have led to a long lag period to root the process in the healthcare system. From the beginning, it has been a "WHO program" and lack of government ownership for financial resources was hindering factor for establishment of the MPDSR process. GoN could not fund MPDSR in the initial period but was actively involved in decision making. FWD was also not fully involved in implementing MPDSR in the past. Even though, WHO has been fully responsible for the implementation and monitoring of the MPDSR process (training, reporting, reviewing of maternal and perinatal deaths, execution of response mechanisms, reviewing the progress and data analysis and dissemination), only one or two officials have been deployed by WHO covering RMNCAH and MPDSR. As such, achieving better performance is practically impossible.

At present, the government has assumed leadership in implementing the MPDSR with sizeable funding from federal as well as provincial levels. WHO also provides funding support. Several issues are encountered in financial support from both GoN and WHO. A forum is available for discussion on fund allocation and reviewing progress. Usually this is done with Deputy Director General Planning of the MoH. However, the mechanisms are not strong enough to overcome issues and speed up implementation. This is mainly due to shortage of human resources at both

WHO and FWD. WCO also faced financial constraints. The allocation of funds from regional office was limited after repeated requests in early 2000. Priority is usually given to NCD / FP etc at country level. Least funding is rendered to RMNCAAH covering many areas and it is also limited to developing guidelines. Regional office was also unable to provide funds for scaling up the program to other hospitals.

Even though the operational guidelines are set, and responsible officials are trained on their roles and responsibilities for implementation, data origination at the ground level has been problematic throughout. The case capture, documentation and transfer of data to the digital platforms are below the estimated number of maternal and perinatal deaths at hospitals. This is more substandard at community level. The main reason seems to be lack of professional awareness and interest. With the apparent WHO leadership and undisclosed government ownership, data originators have posed the question; "Why we should fill in a form from WHO ? ". A surveillance system will not produce intended results if the crucial element, case capture, is in jeopardy. This could have been addressed with the active engagement of professional groups esp. NESOG, PESON and NEPAS. WHO has not adequately sought support and exerted a direct influence on professional colleges for MPDSR. Instead, individual expert support has been obtained. Global experience shows that in many countries, professional colleges were the main drivers of institutionalizing MPDSR. Lack of coordination and collaboration between parties responsible for implementation esp. WHO, FWD, professional groups and other EDPs can be speculated. A united and ambitious effort with clearly set roles and responsibilities is not evident.

Review of cases at hospital and community levels did not take place in line with the guidelines. Multiple and complex issues; delayed case review at health facilities, issues in recording and reporting, inadequate completeness and timeliness of data, poor or no formulation of action plans at hospitals and local levels following death review etc. have all contributed to the underperformance of the program. A major issue noted in almost all levels is the limited health workforce for effective MPDSR implementation.

WHO has continuously been conducting training on MPDSR. With master training of trainers (MTOT), a cascade result was expected which could have supported the scaling of the program. The results are not satisfactory. A revisit of the training package and the assessment of the uptake by the participants have not been performed periodically. Some of the key officials, even at Paropakar Maternity and Women's Hospital, were found to have not undergone MPDSR training. A system to verify the training participants by name does not exist. FWD has attendance sheets. A register of trainees was started one and half years back as an excel sheet maintained at FWD by WHO focal point.

The factors beyond WHO control; earthquake, federalization and COVID-19 largely prevented the smooth execution of MPDSR. During the period 2019 – 2020, there was no dedicated person from WHO located at central level (FWD) to monitor MPDSR, resulting in a low number of reported cases.

Detailed information of MPDSR activities in WHO Biennium operational plans 2011 – 2022 was not available. An evaluation on the completion and quality of the scheduled activities would have been a best practice. With a main focus on activities of skills and competencies of skilled birth attendants, the priority given to MPDSR may not have been sufficient. WHO NPO – RMNCAH has been leading the MPDSR project during the last decade. Subject areas or activities covered by this official other than MPDSR are numerous. With several competing programs and heavy workload, extensive involvement in MPDSR implementation is not possible. The WHO focal point at FWD is also assigned with many other activities of RMNCAH programs in addition to MPDSR.

Considering the high-level prominence given to MPDSR, monitoring of MPDSR activities at the WCO level by the regional office could have been more objective. If a member state is found struggling with implementing MPDSR as expected, a multiprong influencing strategy could have been employed. The existing mechanism of WHO technical monitoring of all tasks for selected expected results of WCO for the biennia shows areas for improvement. The WCO reporting of Key Performance Indicators (KPI) for output 1.1.K MDSR full implementation in the country for the year 2022 as “green” would have been misinterpreted by SEARO.

Formulation of several country plans for the revival and scaling up of MPDSR have been facilitated by WCO even in August 2022 and at the regional meeting in 2016. A close follow-up on the work related to execution of the set activities has not taken place. Monitoring of country level activities reported in output monitoring for SEARO and in the country narrative Business Center Report at disaggregated level would be productive to employ timely intervention from SEARO or HQ.

5. Discussion

In a time framework of more than 30 years, Nepal's MPDSR system has been periodically restructured and progressively evolved. Contrary to the experience in many countries, WHO has taken almost all the burden of introduction and sustenance of the MPDSR in Nepal. The WHO commitment and involvement is also visible through financial and technical support rendered for guideline development, training and review activities along with government institutions.

Global evidence shows that MPDSR is usually initiated under government ownership realizing the need for elimination of maternal deaths in line with global commitment. It assumes a strategic element in improving maternal and child health in a broad national political support. With the perception of the need for a sizeable reduction of maternal mortality, the GoN gradually assumed a key role in MPDSR implementation. The GoN has adopted several national and international strategies to empower women and children in the country. A number of committed instrument plans, policy changes and programs have been set up with strategies to reduce maternal and perinatal mortality. In measuring success, quality data are indispensable. In such a background, the GoN has initiated programs to measure MMR through census, surveys and vital registration systems. MPDSR would also be complementary.

MPDSR as a best practice advocated by WHO, has shown remarkable success in preventing maternal deaths and improving quality of care. Evidence from low and middle income countries indicate that death audits can improve compliance with standards and is most successful when introduced by government as a quality assurance tool with allocated resources and when audit is combined with local guideline development and targeted training (42). It is high time for Nepal to undertake a meaningful evaluation to ascertain the status of putting MPDSR policy to practice and level of operation of MPDSR elements in different contexts and levels.

With reasonable time gaps, the country has introduced facility-based and community based MPDSR modalities. Although it was easy to set up hospital MPDSR, adding community-based models requires time, high-level engagement and resources. The country has successfully done this although there are concerns about optimum-level implementation. The present MPDSR operates with almost all key elements in the country. When the MPDSR is optimal in operation, the element of "surveillance" necessitates more accurate and complete data on number of maternal and perinatal deaths, and the "response" component delivers formulating and implementing targeted recommendations to prevent further deaths. Nepal is yet to achieve optimum in both components and a fully functional MDSR system.

Many issues and challenges are observed in the country's MPDSR process. Starting from underreporting of cases, delayed case reviews, suboptimal response mechanisms and inadequate engagement of key players, the system lags to showcase intended outcomes. A challenge in many countries in expanding and sustaining MPDSR is limitations of resources (financial and human). In several countries the MPDSR systems have not been executed as the

financial allocations were not received to scale up (42). However, in Nepal, both the government and WHO have tried to assume the leadership and provided funding.

Several well-established MPDSR systems are owned by professional groups especially obstetricians. Their members are engaged in the process as members of national TWGs, reviewers or in the MPDSR committees. If they can assume it would augment the implementation and sustainability of MPDSR especially in low resource country settings like Nepal. For this to materialize, health professionals involved in the process should be reassured with appropriate legal frameworks that punitive actions would not be contemplated out of the cases. At the same time, review environment should be ensured to avert or mitigate a blame culture.

The following SWOT analysis illustrates the strengths, weaknesses, opportunities and threats of MPDSR in the country (Figure – 11).

Figure – 11

Summary of SWOT analysis of the implementation of MPDSR in Nepal

5.1 Strengths

As observed by evaluators

MPDSR, an established program and identified as a flagship public health program in Nepal. MPDSR is undertaken by many entities in all the tiers of governments as a priority program. Increased public awareness on MPDSR as a key strategy for reducing preventable maternal and perinatal mortality. A significant number of trained MPDSR cadres have been developed to continue the program.

As perceived by MOHP

Availability of necessary legal and policy framework to implement and scale up MPDSR program, if necessary, funds are available. MPDSR has been brought to a state of recognized national program with the technical and financial support of WHO. Maternal mortality has reduced significantly as shown by 2021 Post Census, Maternal mortality survey 2022.It has been mainstreamed in public health system by all the tiers of governments.

As perceived by DOHS

To start with, it was perceived by national entities as a WHO project but most of the health institutions take it as an important public health strategy to reduce maternal and perinatal mortality. Recently MPDSR has been included in Basic Health Care Package to be implemented and managed by Local Level Governments. WHO's financial support works as a catalyst to the domestic MPDSR funds. Development and deployment of trained cadres in larger hospitals of the country. WHO supported dedicated focal person is monitoring MPDSR at national level and some technical support is available in some provinces.

As perceived by EDPs/WCO

A key public health strategy supported by WHO to reduce maternal and perinatal mortality in the country by enhancing the national MPDSR capacity to implement and scale up MPDSR is present at national level. Existing policy and legal documents are sufficient to implement and strengthen MPDSR.

5.2 Weaknesses

As observed by evaluators

The shortage of trained staff at all levels of governments after staff adjustment process during restructuring, has significantly impaired the process of expansion of MPDSR at subnational levels. Conflicting and competing priorities to hamper scale up and expansion of an important national program, MPDSR at subnational levels. Lack of accountability and proper understanding of MPDSR even in the bigger implementing hospitals. Lack of strict legal provision and mandatory reporting of death of mother and newborns. Poor coordination, lack of clarity of role and responsibility and disturbed chain of command and supply chain management at sub national levels.

As perceived by MOHP

Poor coordination among the key players of MPDSR (both internal and external) resulting in poor compliance of legal and policy decisions. Annual trend of decreasing health budget compromising the expansion and implementation of program as committed in national plan of

actions. As domestic funding is being squeezed, EDP support is also being shrunken for funding public health programs.

As perceived by DOHS

Lack of trained MPDSR cadres which is aggravated and complicated by staff adjustment process during restructuring of the country. Compromised annual health budget to sustain and scale up MPDSR. WHO is the only dedicated stakeholder up to date to commit long term funding for MPDSR.

As perceived by EDPs /WCO

Lack of adequate staff in the Government system at national and sub-national levels to scale up and sustain the program as per implementation plan. Lack of dedicated focal person in all the implementing entities of governments. Lack of adequate financial and technical resources especially at subnational levels. Quality assurance is a big challenge.

5.3 Opportunities

As observed by evaluators

Continuous technical and financial support from WHO and other stake holders showing their interest in newborn health. Possibilities of mobilization of domestic resources by local levels (municipalities) and Provincial governments at subnational level. Transferred responsibility and authority to diversified subnational governments with a possibility of multiplication of resources.

As perceived by MOH

Multiplication of subnational financial resources to expand and sustain MPDSR. Mainstreaming of MPDSR in public health system in all the tiers of governments. Increasing interests and commitment of EDPs for supporting MPDSR.

As perceived by DOHS

Strengthened public health infrastructures to mitigate the impacts of COVID- 19 pandemic. Government of Nepal has a plan to establish basic hospitals in all the Municipalities. GON is Planning to increase human resources for health as per the National HRH roadmap. Professional societies are aware and committed to including MPDSR in their constitutions. Academia and medical colleges are committed to including MPDSR in their preservice curriculums.

As perceived by EDPs /WCO

Increased collaboration and coordination among EDPs and INGOS to support MPDSR. Possibility of prioritization of MPDSR in federated governance structures. Increased national political awareness about MPDSR.

5.4 Threats

As observed by evaluators

Poor coordination among government stakeholders for the ownership of the program. Political instability, Emerging and reemerging public health emergencies and disasters impacting public health. Poor resilience of national public health system.

As perceived by MOHP

Lack of sustained effort to drive public health program because of political instability. Shortage of domestic funding because of the global economic crisis. Lack of chain of command for successful implementation of MPDSR.

As perceived by DOHs

Lack of adequate financial resources for implementation as per national plan. Lack of political commitment and priority. Decrease in external funding to health budget.

As Perceived by EDPs/WCO

Complicated administrative and financial procedures to support at subnational levels. Lack of clear understanding about MPDSR in sub national levels. Impact of public health emergencies and political transition of Federalism. Shortage of external funding for health because of global economic recession.

6. Conclusions

Political & Policy Environment

1. MPDSR in Nepal was started as a project mode of WHO and later streamlined as a government initiative. It scaled up satisfactorily despite all challenges. All three levels (HQ / SEARO / WCO) of WHO are working synchronously in the country.
2. The commitment from political and policy level is very high in all levels of federal structure. FWD considers MPDSR as a priority for implementation. The commitment on the measurement of maternal mortality and the review of maternal and perinatal deaths is clearly notable eg. Census study in 2022.This is reflected even at provincial levels eg. Chief Minister – Lumbini Province assuming ownership in 2016. Some Provinces and local levels have allocated up to 10% of their budget for health development.
   However, this has been inconsistent and event and person based. A sustained political and policy level focus on MPDSR is not readily phenomenal as reflected in MPDSR related ownership, lack of enabling policies, inadequate human and financial resources, underperforming TWG and diluted central level authority in the process.
3. During the COVID19 pandemic, maternal death surveillance led to changes in practice, programs and policies. This shows the potential the system and the key players possess in executing a process of MPDSR and a best practice that needs to be capitalized to rejuvenate MPDSR.
4. The focus on PDSR by all key players is insufficient and unacceptably lagging behind.

MPDSR Process

5. At present Nepal has a MDSR system with all the elements advocated by WHO encompassing six steps of the mortality audit cycle (Identify, collect information / notify, analyze information, recommend solutions, implement recommendations, evaluate and refine). With facility based and community-based arms Nepal's MPDSR is slowly maturing. Several rounds of restructuring have allowed the system to develop into its current status. However, they were not sufficient enough to achieve the expected quality and results.
6. The majority of participating facilities notify maternal deaths. But this is far below from the community. Non-existence of specific regulations on the need for mandatory notification of maternal (and perinatal) deaths has diluted the accountability of the responsible officials, healthcare workers and the relevant institutions.
7. Present MPDSR case formats are perceived to be lengthy and include individual and institutional identifiers. Use of ICD-MM and ICD-PM is appreciative, but it is not optimal.
8. The MPDSR has not yet been fully institutionalized within the health system of Nepal. The establishment and quality of the MPDSR mechanism varies from central, facility and provincial levels significantly.
9. The system has challenges in identifying all deaths in facilities and communities. Several maternal mortality studies and estimations have made available reasonably accurate mortality indices. MPDSR has failed to produce nationally-representative mortality indices.

10. Maternal and perinatal deaths are reviewed with the participation of all related healthcare personnel. Hospital level management of cases seem to be based on norms of each facility and based on individual expertise and experience. Standard guidelines in the management of maternal and neonatal cases are not readily available nor practiced in majority of facilities. This has diluted the requisite for evidence-based practice and case review process. As such, comparison of case management against national standards has not been perceived by officials involved in MPDSR. External peer review of the cases is not noted. This has impeded the objective case review and ensuring quality of care in the formulated actions and response mechanism.
11. Many facilities document the proceedings of the case reviews and translate lessons learnt at the case reviews into practice change. A methodical response mechanism with identification of deficiencies, SMART formulation of recommendations and dissemination of actions worked out for responsible officials do not take place.
12. A tedious and exhaustive role is played by the WHO focal point at FWD in data monitoring at central level. However, a methodical or systematic process is not in place to capture missing cases, address data gaps and maintain timeliness of data receipt. Even with repeated reminders and individual communications, data originating institutions and individuals have not obliged with data submission. No evidence is noted for provincial or district level monitoring mechanisms.
13. A data triangulation mechanism for MMR data from various data bases is at present not executed. Direct access to Hospital Mortality Register has been provided to FWD facilitating the capture of maternal and perinatal deaths. This has not been utilized for data triangulation.
14. Several periodic data analysis reports were available, and dissemination has taken place. Data originators do not receive feedback on their data. Suboptimal processes for data analysis, and poor flow of data from district to national level have affected the quality and quantity of information available for analysis and recommendations.

    The outcome of the review is not communicated to the central level. Planning for implementation and monitoring of responses and challenges are not observed.
15. MPDSR is not currently linked with quality of care improvement initiatives. (eg. Quality Health Service National Policy 2064, Minimum Services Standards (MSS), Health Facility Quality Improvement Module (Maternal and Newborn Health Service QI tools), Quality Improvement Framework 2079, Standards of Clinical Audit 2079, Standard Hospital Mortality Register and Initiative to audit all hospital deaths etc). GoN is in a transitional period of shifting policy from coverage to quality in catering quality of health care services to achieve Universal Health Coverage, but MPDSR is yet to link with such initiatives.
16. Both maternal death surveillance and response and monthly perinatal death reviews are conducted at facility level in presumed cordial atmosphere. Although there has been blame culture at the initial phases, at present it has not been a threat to the case discussion. Concerns are raised by professional organizations on confidentiality, anonymity and possible punitive actions out of MPDSR. At present supportive legal provisions are not existent to cater to this need.

Professional Groups

17. Key responsible professional organizations, especially NESOG and PESON, have engaged in the MPDSR process development and its implementation. A constructive support is shown by professional colleges and other developmental partners. Their strong involvement at national and especially sub-national level is not satisfactory. Some of them are not fully knowledgeable on the process.

Involvement of WHO

18. WHO's contribution is reflected in almost all achievements in the current status of MPDSR. WHO has played a pioneering and catalytic role in putting MPDSR into action and sustaining the same. The multifaceted involvement of WHO has immensely contributed to the maturation and reshaping of the system throughout its evolution. MPDSR has assumed a key area of WCO and WHO SEARO agenda.
19. WHO has been extensively engaged in sensitizing the government, developing guidelines, MPDSR training, progress reviews, central level monitoring and mobilizing other partners. Capacity building of entire spectrum of players on MPDSR by different models of trainings at strategic points of maturation of the program by WHO with the support from SEARO is remarkable.
20. WHO has provided both financial and technical support throughout its evolvement and continued satisfactorily. Solid and detailed data were not available to assess whether the financial support was adequate. The technical support has aligned with WHO guidelines and almost all steps of MPDSR such as identification of deaths, review process, ascertainment of cause of death using ICD MM/PM classifications, pregnancy checkbox in death declaration form and use of MCCD in verbal autopsy were in line with WHO specifications.
21. The support has improved and impacted on several maternal death surveillance attributes including representativeness, data quality, acceptability, sensitivity etc. Systems strengthening and linking findings in the decision-making process facilitated by WHO improved MPDSR in Nepal. The evidence indirectly suggests that WHO support may have contributed to the reduction of MMR, SBR and NNMR.
22. However, a fully-functional MPDSR system is yet to be established in Nepal. Considering the multiple areas identified for further improvements in MPDSR, it could be speculated that WHO could have played a more rigorous and active role when the expected performance outcomes were not achieved. Considering the high-level prominence given to MPDSR at global, regional and country level, monitoring of MPDSR activities by WHO could have been more objective. Regional level monitoring of country level WHO activities needs further improvements. Even though the MPDSR of Nepal was not producing results as expected, there was no trigger noted by SEARO that warranted feedback or regional level intervention. The current WHO's monitoring / response system seems to be not sensitive enough to capture activity outcomes from country level.

Human Resources

23. The concept of MPDSR, the need of the same and benefits are known to many of the officials. However, the enthusiasm of the entire spectrum of key players from policy to the ground level implementation on the MPDSR needs improvement.
24. Many of the focal points of MPDSR at facility and community level shows satisfactory enthusiasm and commitment. The MPDSR training provided with the support of WHO has improved the capacity of related personnel in six steps of the maternal mortality cycle. This capacity has not been properly utilized due to diluted attitude, lack of accountability and low level priority placed on MPDSR.
25. The restructuring and quality improvements of MPDSR have not been sufficient enough for all the spectrum of stakeholders to perceive a benefit. No evidence is noted whether the MPDSR activities are incorporated in job functions of relevant healthcare personnel. Participation at MPDSR activities is not mandatory. Administrators, clinicians and community healthcare personnel are yet to recognize MPDSR as an adjunct quality of care improvement and mechanism to achieve better patient outcomes.
26. No dedicated person from FWD on MPDSR.
27. Provinces currently do not play an active role in MPDSR. Although there are MPDSR committees, they are not fully functional.

Financing

28. WHO has significantly financed the MPDSR program throughout its evolution. The GoN has also started funding MPDSR. Availability of adequate and sustained funds for the MPDSR is not evident both from GoN, WHO and other partners.
29. Although there have been incentives paid for health personnel for completing MPDSR case formats, this system has not produced expected results. At present, such incentives are not paid or not promoted as there are no sufficient funds.
30. Other developmental partners show interest to fund and contribute to MPDSR. A structured mechanism is not in place to capitalize the funding opportunities specific for MPDSR.

7. Recommendations

Based on the evaluation and in line with global evidence and best practices, following recommendations and changes are suggested to be made to the existing MPDSR modality and strategy to ensure that future interventions are based on comparative advantages, tailored to the country needs, effective and efforts are sustained in the evolving contextual circumstances in the country;

Political & Policy Level

1. Execute an awareness strategy and advocacy on the need and advantages of MPDSR from policy to the ground level encompassing the entire spectrum of key players. A tailor-made advocacy strategy may be tried. Modalities like sensitization with tragic case stories and missed opportunities are shown to be productive in promoting the engagement of stakeholders including policy makers.
2. Ensure sustained political and policy level commitment. Government support with enabling policies, adequate human and financial resources, and stakeholder participation are crucial for buy-in at national and sub-national levels. Shift the ownership of the program to the government counterparts – FWD. Strong government ownership, commitment and involvement should facilitate financing, administrative support and central level authority on the process.
3. Initiate policy dialogues with federal, provincial and local level governments to take up the ownership of MPDSR. An implementation framework for the MPDSR programme that is owned by Federal, Provincial and Local Government should be prepared.
4. Convince the government for adequate and sustained funds for the MPDSR as a high priority area. Responsible agencies could be informed to use MPDSR data to target government budget allocations and revise key performance indicators. Though a substantial financial support could be received from GoN, WHO should mobilize more funding for the sustenance of MPDSR.
5. Revive the existing national TWG on MPDSR to be a more authoritative and dynamic governing body overseeing the entire MPDSR process (Follow the modality of RH Subcluster during the Covid19 pandemic).
6. Enforce mandatory notification of maternal (and perinatal) deaths and ensure adherence to the same by all relevant officials and institutions. This is already included in the Reproductive Health regulation, which clearly outlines the requirement. (This has been submitted to Cabinet for approval). This will create a binding attitude and will lead to cascade influence for the other steps of the MPDSR cycle.

MPDSR Process

7. Revisit and restructure the existing MPDSR process as an urgency for reducing maternal and perinatal mortality in the background of stagnant mortality indices and federalization. It is important to scale up the existing system and institutionalize it to health system as a formal national level process. The experience gained out of the RH subcluster during the Covid19 pandemic showed that counting and learning from

maternal deaths are doable in Nepal. Following the same principles and strategies, a phased approach targeting a fully institutionalized MPDSR system, identifying all deaths in facilities and communities, and producing nationally-representative mortality indices should be worked out.

8. Revise currently-used case formats to limit to essential variables. Anonymize them excluding individual and institutional identifiers. Strengthen the use of ICD-MM and ICD-PM. Inclusion of an external reviewer or representative from a professional organization in the MDR committee meeting will improve the objectivity and quality of the case review. Enforce a professional requirement to participate in MPDSRs.
9. Capitalize on numerous existing opportunities and platforms in further reshaping MPDSR in the country; especially, GoN's Minimum Services Standards, Health Facility Quality Improvement Module (Maternal and Newborn Health Service QI tools) and hospital death audits, WHO - upcoming CCS and hands-on exposure on role model systems in other countries.
10. Strengthen the response mechanism starting from hospital / community level up to the policy level. Introduce systematic identification of areas for improvements, SMART formulation of recommendations targeted at different levels of the health system and dissemination of remedial actions to all the stakeholders concerned. The response mechanisms could be optimized if it is aligned with quality of care initiatives at all levels. Getting identified solutions or recommendations into action may be the hardest part of the MPDSR cycle. A non-punitive feedback following the case review at facility level should be designed and delivered to all the participants. It should be highlighted that some problems cannot be solved immediately at facility or central level. This will mitigate discouragement of involved parties.
11. Tighten data monitoring at central, provincial and district levels. Introduce accountability with new regulations for data generation and data transfer to next levels. Revisit and revise current central level data monitoring mechanism.
12. Triangulate maternal and perinatal mortality data from different sources. Capitalize on ongoing HMIS reforms. Access hospital mortality data platforms (eg. Hospital Mortality Register) to capture maternal and perinatal deaths. However, surveillance should be function as a separate surveillance mechanism. The unique feature of surveillance, individual data compilation, should not be disregarded. -direct access provided to FWD. Collect accurate data on number of live births and maternal / perinatal deaths also from district health information systems or routine death registration.
13. Undertake periodic data analysis and dissemination. Use technology to support data analysis across palikas, facilities, districts or provinces. Introduce a structured data dissemination model. Data originators should receive feedback to know the ultimate fate and use of their data. Initiate a central level desk review of selected maternal deaths on pilot basis.
14. Revive PDSR in its entirety with a special focus. Capitalize on the commitment of the UNICEF and facilitate them to lead in the subject area.

Professional Groups

15. Convince professional organizations the need for their strong engagement in the MPDSR process. For a well-functioning MPDSR system, the support of professional organizations is indispensable. The technical capacities, knowledge and enthusiasm of them should be augmented. Involve both national and sub-national obstetric, paediatric and perinatal societies. Facilitate reinforcement of MPDSR policies to their membership and encourage health professionals to participate MPDSR activities at facility level as part of professional development. Update and monitor the adherence to the national reproductive clinical guidelines / protocols in both public and private health institutions. Inculcate a culture among healthcare workers of quality improvement through reflection on practice based on guidelines. Introduce mechanisms for health professionals to act on case review findings and actions to improve quality of care at facility level.
16. Facilitate creating adequate legal frameworks to prevent punitive action out of MPDSR. Convince and reassure health professionals involved in MPDSR of the principles of confidentiality and anonymity. Establish a non-threatening environment for a more productive case discussion and avert a blame culture. Ensure that information generated through MPDSR is not used for disciplinary or litigation purposes.

Human Resources

17. Introduce more structured country-specific MPDSR training packages in align with federalization. The generic modules of MPDSR may not address weak areas of six-step maternal mortality audit cycle in Nepal. Initiate a detailed database on completed and prospective trainees and follow up them for transfer of the knowledge gained into practice. Organize refresher trainings at key facilities for newcomers and already trained healthcare personnel.
18. Capitalize on the enthusiasm and commitment shown by different health personnel at facility and community level and their capacity in six steps of the maternal mortality cycle. Incorporate MPDSR activities in job functions and emphasize all the spectrum of stakeholders the benefits of MPDSR for quality of care improvement and as a mechanism to achieve better patient outcomes. Enforce participation at different MPDSR activities mandatory.
19. Allocate a dedicated person from FWD on MPDSR.
20. Activate provincial MPDSR committees with the support of provincial governments and dedicated development partners assigned to each province.

Stake of WHO

21. WHO lead role is still indispensable in both technical and financial support to sustain and scale up MPDSR. It is inevitable to sustain the current stake and play a more rigorous and catalytic role to involve all categories of players (including the government and other developmental partners at national and provincial levels) into MPDSR. Although, WHO is usually engaged at policy and strategic level, more involvement is essential at the implementation level also in the current juncture of the MPDSR program.

a. Revisit the last 5 biennium work plans to objectively evaluate the end result of WHO support for MPDSR. Identify pitfalls and workout solutions.
b. Allocate more funding specifically for MPDSR. Introduce performance-linked disbursement of funds.
c. Develop a roadmap on institutionalization of MPDSR signifying milestones that should be achieved both by GoN and WHO with a target of shifting the present WHO role to the government.
d. Motivate key players including the government and professional groups at national and provincial levels. Undertake a stakeholder mapping for MPDSR. Harmonize with other developmental partners, especially UN agencies: WHO, UNICEF, UNFPA, World Bank, UNAIDS and UN WOMEN, to delegate strategic elements of MPDSR process.
e. Facilitate devolving the central level responsibilities to local level clearly identifying roles and responsibilities at each level.
f. Simplify the MPDSR process and the case formats.
g. WHO should continue to provide technical support and build capacity on MPDSR of personnels at all levels.
h. Support for an MPDSR – dedicated section at FWD with logistics and human resources
i. Introduce separate independent external audits and evaluations of WHO activities at each level.
j. Introduce at regional level more mechanisms and indicators sensitive enough to capture underperforming country level activities.

8. Limitations

This analysis is a starting point for identifying the pitfalls to and prerequisites to scaling up MDSR to national level and ensuring continuous surveillance and response. What is now needed is a more objective and comprehensive assessment of what is working where and why to understand how MDSR can be implemented optimally. This will complement WHO efforts to track progress through the global implementation survey, and allow for assimilation of lessons learnt with future plans for surveillance and response systems for stillbirths and perinatal deaths.

Even though most of the interviews with the Ministry of Health and population officials were conducted efficiently and were able to yield important information, the evaluators could not obtain answers to all the questions. This can be attributed to the challenges in scheduling interview sessions, time limitations, lack of in-person interactions with all the informants and other logistic issues. Since this is a qualitative study, participant and evaluator biases could have occurred. It is hard to interpret and produce uniform and objective findings to the study. Numerical findings and statistical analyses are limited because of the type of study.

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10. Annexures

Annexure - 1

SN	Name	Title	Organization
WHO SEARO/HQ			
1	Dr. Chandani Anoma Jayathilaka	Medical Officer	FGL/SEARO
2	Dr. Kishori Mahat	Technical Officer	RDO/SEARO
3	Dr. Atul Dahal	PMO	PLN./SEARO
WHO CO-Nepal			
4	Dr. Pooja Pradhan	NPO-FGL	FGL
5	Dr. Surakschha Thapa	NPO-MPDSR	FGL
6	Mr. Paban Ghimire	NPO-HIS	HIS
Ministry of Health and Population			
7	Dr. Roshan Pokharel	Secretary	MoHP
8	Dr. Dipendra Raman Singh	Director General	DoHS
9	Dr. Krishna Paudel	Chief - Policy, Planning and Monitoring Division and Quality Assurance	MoHP
10	Dr Sanjay Thakur	Chief - Health Coordination Division	MoHP
11	Dr. Madan Kumar Upadhyaya	Chief - Quality Standard and Regulation Division	MoHP
12	Dr. Bibek Kumar Lal	Director - Family Welfare Division (FWD)	DoHS
13	Mr. Anil Thapa	Chief HMIS - Management Division (MD)	DoHS
14	Dr. Gauri Pradhan Shrestha	Section Chief - MNH Section (FWD)	DoHS
15	Ms. Nisha Joshi	Sr. PHO - Maternal and Newborn Section (FWD)	DoHS
16	Dr. Punya Poudel	Former Section Chief - Maternal and Newborn Section (FWD)	DoHS
17	Mr. Sharad Sharma	Under- secretary (Former Section Chief)	MoHP
External Development Partners			
18	Ms. Chahana Singh	Health Specialist	UNICEF
19	Ms. Kamala Shrestha	Quality Of Care Specialist (RMNCAH and FP)	NHSSP
Other Association / Academics			
20	Dr Saroja Pandey	Master Trainer, MPDSR	Nepal Society of

SN	Name	Title	Organization
			Obstetricians and Gynecologists (President elect)
21	Dr. Ashma Rana		PESON
22	Prof. Sunil Raja Manadher	Paediatrician	PESON (President elect)
Provincial governments			
23	Ms. Bishnu Shrestha	PHN	Banke, Lumbini Province
24	Ms. Keshu Kafle	Nursing Administrator	Province One
25	Ms. Kamala Rana	Nursing Administrator	Gandaki Province
Implementing Hospitals			
26	Dr. Padma Gurung	Assistant Professor, Obstetrics and Gynaecology	Patan Academy of Health Sciences
27	Dr. Henish Shakya	Associate Professor, Pediatrics	KIST Medical College
28	Dr. Sandesh Poudel	Deputy Director	Paropakar Maternity and Women's Hospital
29	Dr. Kalpana Subedi	Chief Consultant Pediatrician	Paropakar Maternity and Women's Hospital
30	Prof. Dr. Resham Bdr. Rana	Hospital Director	Nepalgunj Medical College Teaching Hospital-Kohalpur (Good MPDSR Implementation)
31	Dr. Khagendra Raj Bhatta	Obstetrics and Gynaecology, HoD	Seti Provincial Hospital

Annexure – 2

Maternal and Perinatal Death Surveillance and Response – Preparatory phase questionnaire - Nepal

BACKGROUND	
What is the national maternal mortality ratio in your country? (Please provide data source and year):	239/100,000 LB (NDHS 2016)
What is the national newborn mortality rate in your country? (Please provide data source and year):	21/1000 LB (NDHS 2022)
What is the national perinatal mortality rate in your country? (Please provide data source and year):	NA
What is the national stillbirth rate in your country? (Please provide data source, year):	18.4/1000 (2015 SDG)
What are the major causes of maternal death in your country?	PPH Pre/Eclampsia Infection Unsafe abortion
What are the major causes of newborn death in your country?	Infection, Asphyxia, Preterm/LBW
What are the major causes of stillbirth in your country?	NA
Are you currently implementing maternal death surveillance and response (MDSR) or maternal death reviews in any other form?	Yes
Are you currently implementing perinatal audit and response or review of stillbirths and/or neonatal deaths in any other form?	Yes
When was MDSR or maternal death reviews first implemented within your country?	1990 from Paropakar Maternity and women's Hospital (tertiary level government hospital)
When was perinatal audit and response or reviews of stillbirths and neonatal deaths first implemented within your country?	1996 MPDR
Are you currently implementing maternal and perinatal death surveillance and response (MPDSR)? Is it only at facility level or only at community level or at both levels?	Yes/ Both facility and community level

KEY STAKEHOLDERS	
Who were the key actors and organizations who influenced the decision to implement MDSR/MPDSR/maternal and perinatal death reviews within your country initially?	*GoN/MoHP/FWD/WHO*
Please provide names and contact information of key actors who could provide detailed information from the past and from the present on MDSR/MPDSR implementation/maternal and perinatal death reviews in your country.	*Director, FWD*

IMPLEMENTATION	
Where was MDSR and MPDSR first implemented within your country, and why? (i.e., geographically)	*Paropakar Maternity and Women's Hospital*
Which national policies and legal frameworks refer to MDSR and MPDSR – notification of death, review of deaths, developing recommendations, acting on recommendations, monitoring implementation? Please provide relevant documents	*MPDSR guidelines 2015*
Has any action been taken to prevent individual health workers and facilities from blame and punitive actions following reviews of maternal and perinatal deaths? If yes, please describe	*NA*
How many healthcare facilities are currently implementing MDSR/ MPDSR in the country?	*94 Hospitals*
How is information on deaths in communities collected, reviewed, and acted on in the MDSR/MPDSR process?	*Through the VA process*
Which levels of healthcare facilities are currently implementing MDSR/MPDSR? (e.g., health centres, district hospitals, teaching hospitals)?	*MDSR: All health facility of 42 districts* *MPDSR: All Hospital*
What is the ownership of healthcare facilities that implement MDSR/MPDSR? (e.g., public/ private/ NGO/ faith-based)?	*Public/Private/NGO/Faith based*
What is your country most proud of regarding MDSR/MPDSR implementation?	*Active surveillance of maternal death during COVID-19 pandemic and response accordingly*
What is the level of ownership of the MPDSR process and its various components by health professional associations and academia training health care providers?	*Involvement of NESOG and PESON in MToT of MPDSR at the central level.* *Technical guidance in developing in MPDSR guideline and support in cause of death analysis.*

PROVIDER TRAINING & ROLE	
What MDSR/MPDSR related training has taken place to date? When and by whom? How many were trained? What cadres?	*MPDSR orientation:all health service providers and managers* *Cause of death analysis: medical officer and specialist* *VA orientation: all PHNs*
What specific roles do healthcare providers play in the MDSR and MPDSR process – notification, review, drafting and implementing recommendations, etc? Please indicate the cadres of healthcare providers involved in these activities	*Notification by: FCHVs* *Screening by: SN/ANMs* *VA by: PHN* *Cause of death assignment: Medical officer/OBGYN/ Pediatrician*
Is MDSR/MPDSR training included in pre service curricula?	*No*

What activities are ongoing for capacity building of health managers at all levels?	*Stakeholder meeting before implementation of the program*
What activities are ongoing in terms of advocacy on MPDSR targeting health care providers, managers and policy makers?	*Policy dialogue and program review was conducted in all provinces*

REVIEWS & ANALYSIS	
Are reviews routinely conducted for all reported maternal and perinatal deaths? If not, what proportion of deaths is reviewed?	*Reviews for all reported maternal and perinatal death are conducted but not routinely specially community deaths*
Who are the participants in death reviews at the different levels? Please describe the composition of the groups that participate in death reviews at the different levels	*There are different committee at different level of hospital so the MPDSR review committee involve in death review process(Refer to the guideline attached)*
Within what time frame are maternal and perinatal deaths expected to be reviewed?	*For Hospital maternal death we should have to review the death within three days and for perinatal death with 28 days.*
In what proportion of death reviews are the reviewers able to satisfactorily determine the causes of death and factors leading to the death?	*Not in all cases*

DATA MANAGEMENT AND FOLLOW UP ACTIONS	
Into what system are MDSR/MPDSR data entered? How are the data analysed, and how frequently? Who is responsible for data management? What quality assurance mechanisms are in place?	*MPDSR Data Base is used to entered and analyzed the data*
Does the MDSR/MPDSR data feed into any routine health information systems? If so, please describe	*No*
Are the completed reviews analysed at an aggregate level? If so, at what level? (e.g., national, sub-national, facility)	*Yes. National level*
Is any information from MPDSR data analysis fed back to facilities and communities? If so, what process is followed? How frequently is it fed back?	*No*
Are there any networks or forums that MPDSR findings feed into at the national level or sub-national level? If so, what/how?	*MPDSR committee and MPDSR TWC both are the forums that MPDSR finding feed at the national level*
What written documents/reports are MPDSR findings fed into?	
What are the main processes for disseminating MPDSR findings?	*Biannual publication of brochure*

	is the main process of dissemination of finding
How are implementation of recommendations made through MPDSR monitored?	*Routine monitoring system*
What are the main challenges and barriers to implementation of recommendations? How are these challenges and barriers being addressed?	*1. Co-ordination between three tire of government.* *2. Financial gaps to scale up and expansion of the program* *3. Cause of death assignment*
INCLUSION OF STILLBIRTHS AND NEONATAL DEATHS	
Have stillbirths and neonatal deaths been included in the review process? If so, when did this happen?	*Yes. Monthly basis*
How are stillbirths and neonatal deaths notified to the authorities? How soon after stillbirths and neonatal deaths and to what level should be information be sent? Please describe the process and any challenges with notification.	*At hospital level if the stillbirth and neonatal death occur the attendee doctor and nurse should have to notify the death and have to fill the PDR form within 72 hrs.*
What process is followed in reviewing stillbirths and neonatal deaths?	*PDR form review*
Have any reports of stillbirth and neonatal death reviews been published in the last three years? If yes, how have these been disseminated? Please share copies of the reports if available	*Newborn Birth Defect Brochure published in 2022(refer to attached brochure)*
If stillbirths and neonatal deaths have not been included in the review process, are there any plans in place to incorporate stillbirths and neonatal? Please describe.	*stillbirths and neonatal deaths have been included in the review process*

FUNDING	
What are the major sources of funding for MDSR/MPDSR implementation in your country?	*Government of Nepal and WHO*
How much funding has been dedicated to MDSR/MPDSR?	*Around 10 crore NPR for FY 2078/79*

Annexure – 3

TABLE 9.1

Example of MDSR monitoring indicators and targets

Indicator	Example 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 annually	Yes
% of districts with maternal death review committees	100%
% of districts with someone responsible for MDSR	100%
Identification and notification	
Health facility:	
All maternal deaths are notified	Yes
– % within 24 hours	>90%
Community:	
% of communities with 'zero reporting' monthly	100%
% of community maternal deaths notified within 48 hours	>80%
District:	
% of expected maternal deaths that are notified	>90%
Review	
Health facility:	
% of hospitals with a review committee	100%
% of health facility maternal deaths reviewed	100%
% of reviews that include recommendations	100%
Community:	
% of verbal autopsies conducted for suspected maternal deaths	>90%
% of notified maternal deaths that are reviewed by district	>90%
District:	
District maternal mortality review committee exists	Yes
– and meets regularly to review facility and community deaths	At least quarterly
– % of reviews that included community participation and feedback	100%
Data Quality Indicators	
Cross-check of data from facility and community on same maternal death	5% of deaths cross-checked
Sample of WRA deaths checked to ensure they are correctly identified as not maternal	1% of WRA rechecked
Response	
Facility:	
% of committee recommendations that are implemented	>80%
– quality of care recommendations	>80%
– other recommendations	>80%
District:	
% of committee recommendations that are implemented	>80%
Reports	
National committee produces annual report	Yes
District committee produces annual report	Yes
– and discusses with key stakeholders including communities	Yes
Impact	
Quality of care (requires specific indicators)	
District maternal mortality ratio	Reduced by 10% annually
Hospital maternal mortality ratio/lethality rates	Reduced by 10% annually

Annexure – 4

Interview topic guide for key informants

MPDSR – Country case study - Nepal

Brief introduction

- Thank you for agreeing to participate today in this in-depth interview.
- The conversation today will help us to discuss success and challenges of MPDSR process of Nepal. The insights you provide will be used to understand the country's response mechanism in MPDSR cycle. Please go through this Information sheet and consent form for stakeholder interview to know more about the study.
- We have scheduled approximately one hour for this session.
- If you feel uncomfortable answering any of the questions, let us know and we will skip the question. We can stop the interview at any time. The interview is confidential and will only be used for research purposes to inform this project.
- To help us capture all of the responses you give, we would like to record some of our conversations today. Your information will not be shared outside of government and this data will only be used for the purposes and duration of this research project. Your responses will remain anonymous, and your personal details will not be included in the report. Are you happy for us to record this session?

Any questions? If you are happy with that approach, we'll get started.

Background:

- Please describe your roles and responsibilities in the provision of maternal and new-born health in Nepal
    - How long have you been involved and at what level(s)? (Community, facility, sub-national, national)
- Have you been involved in maternal and perinatal death reviews? If yes,
    - For how long, in what capacity (ies), and at what level(s)?
- When were maternal and/or perinatal death reviews first implemented in Nepal?
    - What was the rationale for deciding to implement death reviews?
    - If maternal and perinatal reviews were introduced at different times, what was the rationale for deciding to implement them at different times?
- What opportunities drove the initiation of MDSR and MPDSR within Nepal?
- What steps were followed prior to beginning the implementation of MDSR and MPDSR within Nepal?

Key Stakeholders:

- Who were the key individuals and organisations who initially influenced the decision to implement MDSR/MPDSR/maternal death review/Stillbirth reviews/neonatal death review within Nepal?
    - How much enthusiasm was there for MDSR/MPDSR/death reviews/stillbirth review at the outset?
    - How did it vary between stakeholders?
    - Were there any concerns expressed by stakeholders at the outset? If yes, what were these concerns?
- After deciding to implement MDSR/MPDSR/death reviews/stillbirth review/PDR, who were the key actors/organisations initially involved in driving implementation forwards?
    - In what capacity?
- Who are the key actors/organisations who are currently engaged in MDSR/MPDSR/death review/stillbirth review implementation?

    - In what capacity?
- Has enthusiasm and commitment by key stakeholders changed over time?
    - What factors have influenced this change?
    - Does this vary between stakeholders?
    - Are there any concerns expressed by stakeholders now? If yes, what are these concerns?

Political Commitment:

- At the outset, how much political will/commitment towards MDSR/MPDSR was there from the Ministry of Health and Population /Department of Health Services?
    - Was /were there any individual(s) who in your opinion drove the process in the country? If yes, please describe
- Has political will/commitment towards MDSR/MPDSR changed over time?
    - If yes, please describe the changes and the underlying changes
    - What have been the biggest challenges in ensuring political commitment?
    - How have these challenges been addressed?
- Are there national policies and legal frameworks that refer to MDSR/MPDSR?
    - If yes, please describe how these were developed
- Are there subnational policies and legal frameworks that refer to MDSR/MPDSR?

Implementation:

- In which specific place (facility, community, district, region, capital city, etc) was MDSR/MPDSR first implemented within Nepal?
    - Why was this location preferred?
- How has MDSR/MPDSR implementation expanded over time?
    - If implementation is still restricted to selected areas, what are the plans for further expansion and the timelines for the roll out?
    - What factors have thus far influenced the roll-out?
    - At what levels of healthcare facilities (e.g., health centres, district hospitals) is MDSR/MPDSR being implemented now?
    - What is the level of implementation of MPDSR review of maternal and perinatal deaths at home or in the community? Can you provide details of implementation including challenges?
    - Does MDSR/MPDSR implementation cover areas of the country with humanitarian needs? If yes, please provide details
    - Was MDSR/MPDSR implementation impacted by the Covid 19 pandemic? If yes, please describe the impact.
- Are non-government owned/operated healthcare facilities (faith-based, NGO, private for profit) involved in MDSR/MPDSR implementation?
    - If yes, please describe their involvement
    - If not, were any attempts been made to involve non-government owned health care facilities in MDSR/MPDSR implementation and what have been the responses to these attempts?
- What attempts, if any, have been made to sustain or increase local, subnational, and national commitment to MDSR/MPDSR over time?
    - Please describe these attempts
    - How successful have these been?
- What have been the biggest challenges, obstacles, or barriers that have been encountered during the MDSR/MPDSR implementation process?
    - What was done to try to address these challenges, obstacles, or barriers?
- What have been the most successful achievements of MDSR/MPDSR implementation?
    - What are you - as an individual - most proud of your country's achievements in MDSR/MPDSR implementation?
    - Are there any achievements that could be replicated in other countries? If yes, please describe them.

- What is the level of engagement of health professional associations in the MDSR/MPDSR processes? Do you feel that they are fully engaged and committed to the process? Can you give some concrete examples in the implementation? Do health professional association guidelines include MDSR/MPDSR as one of their priorities?
    - Have MDSR/MPDSR processes been integrated in preservice training curricula? Or are they limited to in service training only?

Healthcare Providers and MDSR/MPDSR

- Have healthcare providers been trained in MDSR/MPDSR?
    - If yes, how many have been trained?
    - When was the training provided and by whom?
    - What cadres of healthcare providers have been trained in MDSR/MPDSR?
    - Are healthcare providers at all levels of the health system been trained? If not, which levels have not been included?
    - Have healthcare providers had refresher training in MDSR/MPDSR?
    - What have been the biggest obstacles in providing MDSR/MPDSR related training?
- What is/was the general attitude of health care providers towards MDSR/MPDSR
    - Prior to training?
    - After training?
    - After implementation of MDSR/MPDSR?
    - How confident are health care providers in implementing MDSR/MPDSR?
- What roles do healthcare providers play in the various steps of the MDSR/MPDSR process?
    - Do these differ by the level of healthcare facility? Please provide examples
- Are individual healthcare providers worried about being blamed for maternal or perinatal deaths?
    - If yes, could you please provide a typical example without identifying the individual healthcare provider, the healthcare facility, or the individual whose death was being reviewed?
    - Has any action been taken to prevent individual health workers and facilities from blame and punitive actions following maternal and perinatal deaths?
    - How successful have these activities been in addressing the “blame” culture?

Reviews & Analyses:

- Are maternal/perinatal death reviews routinely conducted for <u>all</u> relevant deaths?
    - If not, what are the main reasons for not doing so?
- Within what time frame are maternal and perinatal deaths expected to be reviewed?
    - What proportion of the reviews is consistently conducted within the correct time limits?
    - What are the main reasons for not doing so?
- Who participates in the death reviews at the different levels?
    - Please describe the composition of the groups that participate in death reviews
    - If you have participated in death reviews, please describe your experience of the process, and share any challenges that you faced
- In what proportion of death reviews are the reviewers able to satisfactorily determine the causes of death and factors leading to the death?
    - What are the main reasons for inability to determine causes and factors leading to death?
- What proportion of recommendations made following death reviews are for
    - Improving health seeking behaviours of individuals and communities?
    - Improving transport and referral processes?
    - Improving quality of care in facilities?
    - Improving follow up care after discharge from facilities?
- What proportion of recommendations made
    - Are potentially achievable within 1-2 years? Please give an example.
    - Are potentially achievable with existing resources? Please give an example

Data Management and Follow up Actions:

- What system is used for recording MDSR/MPDSR data?

    - How soon after death are data entered in the system?
    - Who is responsible for data collection for deaths (a) in facilities (b) at home?
    - Describe the methods used for data collection (a) in facilities (b) at home
    - Who is responsible for data entry?
    - How are data analysed? How often?
    - Who is responsible for data analysis?
    - Who maintains the database?
    - How is confidentiality of data ensured?
    - What data quality assurance mechanisms are in place?
- Do MDSR/MPDSR data feed into any routine data systems? If so, please describe
    - Are the national Health Management Information Systems (e.g. DHIS2), and the MPDSR database integrated? Or are they managed separately?
- At what level are the completed reviews aggregated for analyses? (e.g., national, sub-national, facility)
    - How often are the aggregated reviews analysed?
- Is any information from MDSR/MPDSR data analyses fed back to facilities and communities?
    - If so, what is process followed?
    - How frequently is the information fed back?
    - In general, what has been the response from facilities.
- What are the key challenges to timely completion of:
    - Reviews?
    - Data analysis?
    - Feedback?
- What have been the key findings from the review process in the last two years?
- Are there any networks, initiatives, or forums that MDSR/MPDSR findings feed into at the national level or subnational level?
    - If so, please describe them and how they work with MDSR/MPDSR findings?
- How are the findings of MDSR/MPDSR disseminated?
    - If reports are published, how often and is what format are they available?
    - Any dissemination meetings at national and subnational levels?
    - Is the information shared through the media?
    - Is the information shared through community platforms?
    - What has been the general response in the country to the information?
- What key actions have been taken to date in response to findings from the review process?
    - Please give some examples describing the actions, who initiated it and when, and what were the outcomes
- What are the key challenges and barriers to identifying and implementing remedial actions recommended after death review?
    - Please give some examples
- How is implementation of recommendations from the MDSR/MPDSR process monitored?
    - What have been the key challenges in monitoring implementation? Please give some examples.
- Are any of the MDSR/MPDSR data integrated within the national HMIS indicators? Are there MDSR/MPDSR related indicators that are included within the national HMIS? Is there a parallel digital data system in place to document MDSR/ MPDSR ?
- Is there any data triangulation done to compare the results of the MDSR/MPDSR process with other maternal and perinatal death sources?

Inclusion of Perinatal Deaths (stillbirths and neonatal deaths)

- Are perinatal deaths included in the review process?
    - If yes, please clarify how perinatal deaths are defined.
    - When did this begin?
    - What process was followed for the inclusion of perinatal deaths?
- How are perinatal deaths notified to the authorities?

    - How soon after perinatal deaths and to what level should be information be sent?
    - Please describe the process and any challenges with notification.
- What process is followed in reviewing perinatal deaths?
    - Are all perinatal deaths reviewed? If not, how are deaths selected for review?
    - Does the review process differ from the maternal death review process? If so, how?
- What challenges, obstacles, or barriers have been encountered while trying to incorporate perinatal deaths into the maternal death review process? Please provide examples
    - What has been done to address these challenges, obstacles, or barriers?
- If perinatal deaths are not being reviewed, are there any plans in place to include perinatal deaths with maternal death reviews?
    - How important do key stakeholders think it is to incorporate perinatal deaths with the maternal death review process?
    - How do their views vary?

Funding

- What are the major sources of funding for MDSR/MPDSR implementation in Nepal?
- Have funding restrictions hampered MDSR/MPDSR implementation plans?
    - If so, how? Please give examples
- Have there been any challenges with trying to obtain funding for MDSR/MPDSR?
    - If so, describe these challenges
    - Describe any strategies that have been used successfully to mobilise resources for MDSR/MPDSR?

Moving Forwards

- In your opinion, what should be the priority activities in the future for MDSR/MPDSR implementation?
    - Probe for extending implementation to areas not currently covered e.g., humanitarian settings, improving response, etc (depending on responses to earlier topics)
- Does the current situation in our country facilitate initiation of these priority activities?
    - What would be the facilitators for the priority activities?
- What challenges do you anticipate in the present situation with conducting these priority activities?
    - How do you propose to address those challenges?

Annexure – 5

Plans for MPDSR Implementation
2016-2020

NEPAL

Participants: Dr. Pushpa, Dr. Bichha, Dr. Sharad, Dr. Meera, Dr. Asha, Dr. Laxman, Dr. Buddhi, Dr. Lata, Dr. Ashma, Dr. Kusum, Mr. Pradeep, Ms. Sabita

Nepal

Table: 1. Plan for implementing MPDSR 2016–2020, Nepal

No	Dimension/scope		2016	2017	2018	2019	2020
1	Place of death identified	Mater-nal: *facility*	Strengthen MPDSR in 42 hospitals (Government Facility+Medical College) MPDSR in facilities of 5 districts	Strengthen MPDSR in 42 hospitals (Government Facility+Medical College) All facilities of 5 districts	Strengthen MPDSR in 42 hospitals (Government Facility+Medical College) 10–12 districts covering all facilities (previous 5+5–7 new districts)	Strengthen MPDSR in 42 hospitals (Government Facility+Medical College) 15–17 districts covering all facilities (previous 10–12+5–7 new districts)	Will be Covered in all 75 districts; streng-then MPDSR in 42 hospitals (Government Fa-cility+Medical Col-lege), 20 districts covering all facilities (previous 15+5 new districts)
		Maternal: *community*	5 districts (partial)	5 districts (full)	10–12 districts	15–17 districts	20 districts
		Perinatal *(only in health facility)*	42 hospitals (Government Facility+Medical College)+all facilities of 5 districts	42 hospitals (Government Facility+Medical College)	10–12 districts covering all facilities (previous 5+5–7 new districts)	15–17 districts covering all facilities (previous 10–12+5–7 new districts)	20 districts covering all facilities (previous 15+5 new districts)
2	Scale of Coverage of MPDSR system	Mater-nal: *facility*	Strengthen MPDSR in 42 hospitals MPDSR in facilities of 5 districts	Strengthen in 42 hospitals All facilities of 5 districts	Strengthen MPDSR in 42 hospitals, 10–12 districts covering all facilities (previous 5+5–7 new districts)	Strengthen MPDSR in 42 hospitals, 15–17 districts covering all facilities (previous 10–12+5–7 new districts)	Will be covered in all 75 districts; strengthen MPDSR in 42 hospitals, 20 districts covering all facilities (previous 15+5 new districts)
		M: *community*	5 districts (partial)	5 districts (full)	10–12 districts	15–17 districts	20 districts

Table 1. Plan for Implementing MPDSR 20162020

No	Dimension/scope		2016	2017	2018	2019	2020	
1	**Place of death identified**	**Maternal**						
		Facility	Strengthen MPDSR in 42 hospitals (Govt Facility + Medical College) MPDSR in facilities of 5 districts	Strengthen in 42 hospitals (Govt Facility + Medical College) All facilities of 5 districts	Strengthen MPDSR in 42 hospitals (Govt Facility + Medical College) 10-12 districts covering all facilities (previous 5 + 5 -7 new districts)	Strengthen MPDSR in 42 hospitals (Govt Facility + Medical College) 15-17districts covering all facilities (previous 10 -12 + 5-7 new districts)	***All BEONC and CEONC hospitals***	
		Community	5 districts (partial)	5 districts (full)	10-12 districts	15-17 districts	20 districts	Districts to be selected to allow national represent ation
		Perinatal *(only in health facility)*	42 hospitals (Govt Facility + Medical College)+ all facilities of 5 districts	42 hospitals (Govt Facility + Medical College)	10-12 districts covering all facilities (previous 5 + 5 -7 new districts)	15-17 districts covering all facilities (previous 10 - 12+ 5-7 new districts)	20 districts covering all facilities (previous 15 + 5 new districts)	To be added

Table 1. Plan for Implementing MPDSR 20162020

No	Dimension/scope		2016	2017	2018	2019	2020	
1	**Scale of Coverage of MPDSR system**	**Maternal**						
		Facility	Strengthen MPDSR in 42 hospitals MPDSR in facilities of 5 districts	Strengthen in 42 hospitals All facilities of 5 districts	Strengthen MPDSR in 42 hospitals 10-12 districts covering all facilities (previous 5 + 5 -7 new districts)	Strengthen MPDSR in 42 hospitals 15-17districts covering all facilities (previous 10 -12 + 5-7 new districts)	***Will be Covered in all 75 districts*** Strengthen MPDSR in 42 hospitals 20 districts covering all facilities (previous 15 + 5 new districts)	Districts to be selected to allow national represent ation
		Community	5 districts (partial)	5 districts (full)	10-12 districts	15-17 districts	20 districts	
		Perinatal *(only in health facility)*	42 hospitals (Govt Facility + Medical College)+ all facilities of 5 districts	42 hospitals (Govt Facility + Medical College)	10-12 districts covering all facilities (previous 5 + 5 -7 new districts)	15-17 districts covering all facilities (previous 10 - 12+ 5-7 new districts)	20 districts covering all facilities (previous 15 + 5 new districts)	To be added

Table 1. Plan for Implementing MPDSR 20162020

No	Dimension/scope		2016	2017	2018	2019	2020	
3	**Depth of review process**	**Maternal** *(facility + community)*	Facility: Every death within 72 hrs at facility Community: Every death VA within 2-4 weeks and review and develop response plan within 2 weeks of VA	Facility: Every death within 72 hrs at facility Community: Every death VA within 2-4 weeks and review and develop response plan within 2 weeks of VA	Facility: Every death within 72 hrs at facility Community: Every death VA within 2-4 weeks and review and develop response plan within 2 weeks of VA	Facility: Every death within 72 hrs at facility Community: Every death VA within 2-4 weeks and review and develop response plan within 2 weeks of VA	Facility: Every death within 72 hrs at facility Community: Every death VA within 2-4 weeks and review and develop response plan within 2 weeks of VA	
		Perinatal *(only in facility)*	Every month	Every month	Every month	Every month	Every month	
4	**Addition of near-miss, neonatal morbidity**	We will be implementing facility based perinatal death surveillance and response	We will be implementing facility based perinatal death surveillance and response	We will be implementing facility based perinatal death surveillance and response	We will be implementing facility based perinatal death surveillance and response	We will be implementing facility based perinatal death surveillance and response	We will be implementing facility based perinatal death surveillance and response	

Table 2. Plan for Implementing MPDSR 2016 -2018

No	MDSR Component to be developed/strengthened	2016	2017	2018
A.	**Structures Required for Implementing MPDSR**			
1	National policy to notify all maternal deaths	Nepal Health Sector Strategy 2015-2020 says that all maternal deaths will be reviewed. Nepal ENAP is in process of endorsement at MoH which also emphasize MPDSR. In addition, Nepal is in process of revision of Safe Motherhood Policy to include MPDSR. MPDSR guidelines endorsed.	Process of Revised Safe Motherhood Policy endorsement	Process of Revised Safe Motherhood Policy endorsement
2	National policy to review all maternal deaths	Yes		
3	Establishment/functioning of national MPDSR Committee	Yes		
4	Establishment/functioning of sub-national MPDSR Committee (% districts)	No, but we are in process of forming sub-national committee.	Yes, in the selected districts	Yes, in the selected districts

Table 2. Plan for Implementing MPDSR 2016 -2018

No	MDSR Component to be developed/strengthened	2016	2017	2018
A. Implementation of MPDSR System				
1	**Capability to identify and confirm suspected MP deaths** (% deaths, % districts)	We are implementing in 5 -7 districts out of 75 in 2016 -17, so it will be 7 -10% with the plan to capture all maternal deaths within the district .	We are implementing in 5 - 7 districts out of 75 in 2016-17, so it will be 14 - 20% with the plan to capture all maternal deaths within the district .	We are implementing in 5 -7 districts out of 75 in 2016 -17, so it will be 28-40% with the plan to capture all maternal deaths within the district .
2	**Notification of MP deaths and incorporation in notifiable disease reporting system** (% deaths notified and incorporated in the notifiable disease reporting system)	NA. Plans to incorporate long term	NA. Plans to incorporate long term	NA. Plans to incorporate long term
3	**Notification carried out within 24 hrs for deaths in health facility and 48 hrs for deaths in community; and include zero reporting** (% districts)	Notification- Yes in health facility and Community. Zero reporting: Yes	Notification- Yes in health facility and Community. Zero reporting: Yes	Notification- Yes in health facility and Community. Zero reporting: Yes
4	**Confirmation of suspected maternal deaths and triangulation of data sources to avoid duplicate notification** (% districts)	Yes, in web-based		

Table 2. Plan for Implementing MPDSR 2016 -2018

No	MDSR Component to be developed/strengthened	2016	2017	2018
B. Implementation of MDSR System				
5	MPDR: qualitative, ~~in~~-depth **investigations of the causes of and circumstances surrounding maternal deaths** (% districts)	Yes		
6	Analysis and interpretation of aggregated findings (% districts)	Yes		
7	**Immediate actions taken based on findings from death reviews** as indicated in the recommendations of the reviews (% districts carried out priority actions)	Yes		
8	A **plan for disseminating MPDSR results, recommend and responses** (% districts have the plan)	Yes		
C. Monitoring of MDSR Implementation				
1	Agreement on indicators to be used for monitoring and mechanisms for monitoring progress	Yes **(NHSS)**		
2	A plan for monitoring MDSR implementation to: – improve timeliness, quality and completeness of information – ensure major steps are functioning adequately and improving over time	Yes **(MPDSR IP)**		

Table 3. Plan for Implementing MPDSR in 2016

No	Key Activity	Objective	Responsible Unit	Stakeholders to be involved	Scope	Timeframe
A. Establishment/strengthening of structures required for implementing MPDSR						
1	MPDSR guidelines endorsed		FHD	WHO, UNICEF, USAID,DfID, NEPAS, NESOG, SAFOG, and other interested partners		
	Tools finalized		FHD	WHO, UNICEF, USAID,DfID, NEPAS, NESOG, SAFOG, and other interested partners		
	National MPRSR committee and TWC formed		FHD	WHO, UNICEF, USAID,DfID, NEPAS, NESOG, SAFOG, and other interested partners		
2	Development of district Training/orientation package		FHD and related divisions/centers	WHO, UNICEF, USAID,DfID, NEPAS, NESOG, SAFOG, and other interested partners		
3	Formation of Sub-national committees at district level		FHD	WHO, UNICEF, USAID,DfID, NEPAS, NESOG, SAFOG, and other interested partners		
4	Training and orientation		FHD and related divisions/centers	WHO, UNICEF, USAID,DfID, NEPAS, NESOG, SAFOG, and other interested partners		
5	Strengthen the Demographic Section at FHD for implementation of MPDSR		FHD			
	Include MPDSR in existing pre-service and in -service trainings		FHD			

No	Key Activity	Objective	Responsible Unit	Stakeholders to be involved	Scope	Timeframe
B. Ensuring notification of MP deaths and incorporation in the notifiable disease reporting system						
1	Training to FCHVs, and orientation to Civil Society Organizations (health workers, HFOMCs, medical institutions, RHCC committees and private sector) on notification			WHO, UNICEF, USAID, DfID, NEPAS, NESOG, SAFOG, and other interested partners		
2						
etc						
C. Ensuring quality of MPDR processes, adequacy of recommendations and actions taken						
1	Quarterly review of data/process from center and feedback			WHO, UNICEF, USAID, DfID, NEPAS, NESOG, SAFOG, and other interested partners		
2	Mentoring to district committees			WHO, UNICEF, USAID, DfID, NEPAS, NESOG, SAFOG, and other interested partners		
D. Mechanism of aggregate data analysis of MPDR cases						
1	Develop and strengthen web-based MPDSR reporting system			WHO, UNICEF, USAID, DfID, NEPAS, NESOG, SAFOG, and other interested partners		
	Strengthen linkages with HMIs and CRVS			WHO, UNICEF, USAID, DfID, NEPAS, NESOG, SAFOG, and other interested partners		

Table 3. Plan for Implementing MPDSR in 2016

No	Key Activity	Objective	Responsible Unit	Stakeholders to be involved	Scope	Timeframe
E. Facilitating sub-national programme managers for MDSR implementation						
1	Orientation to district/facility managers					
2	Mentoring					
3	Inter-facility/district sharing of learnings					
F. Monitoring MPDSR implementation						
1	Involve professional organizations and acade in MPDSR					
2	MPDSR team and TWG					
3	Data analysis, use and dissemination					

Annexure – 6

Mapping of implementation of MPDSR system

Country: Nepal

Audit Cycle	Subtopic	Estimate the level of implementation	The current level of implementation	Plans for further improvements based on training programme Responsible person.	Any TA/FA Are needed for further actions
MDSR / MPDSR committee	**Formation and function**	Guidelines /SOP are available MDSR / MPDSR committee establishment, function and defining roles and responsibilities of members of MDSR /MPDSR committees	**The National Guideline clearly defines the structure and ToRs of committees at all levels.**	**Continue orientation on the revised guideline to ensure the specifications mentioned in the guideline are adhered to.** **Responsible:** • **FWD** • **Provinces** • **Districts** • **Local levels** • **Hospitals**	**TA and FA from WHO-CO MCGL UNICEF**
		Membership in MDSR /MPDSR committees are optimum	**Yes**	**Continue orientation on the revised guideline to ensure the specifications mentioned in the guideline are adhered to** **Responsible:** • **FWD** • **Provinces** • **Districts** • **Local levels** • **Hospitals**	**TA and FA from WHO-CO MCGL UNICEF**
		Terms of reference are available for MDSR/MPDSR committees at various levels[1]	**Yes**	**Continue orientation on the revised guideline to ensure the specifications mentioned in the guideline are adhered to**	**TA and FA from WHO-CO MCGL UNICEF**
		MDSR/MPDSR committees are established and functional (regularly meet even if no MD/PND) in all facilities where deliveries occu	**Yes, but not in all facilities**	**- Orientation to the revised National guideline and tools- Ongoing** **Responsible:** • **FWD** • **Provinces** • **Districts** • **Local levels** • **Hospitals**	**TA and FA from WHO-CO MCGL UNICEF**
		MDSR committees are established and functional in all Regions/ districts and	**Yes, in most districts / local levels [MPDSR is**	**- Plan to expand to 11 new districts in 2022-2023** **- Monitor and follow-up to ensure that committees are**	**TA from WHO-CO MCGL UNICEF**

[1] Maternal and Perinatal Death Surveillance and Response: Materials to Support Implementation

Audit Cycle	Subtopic	Estimate the level of implementation	The current level of implementation	Plans for further improvements based on training programme Responsible person.	Any TA/FA Are needed for further actions
		institutions and regularly meet even if no MD/PND	implemented only in 23 districts as of July 2022]	functional and meet even if no Maternal / Perinatal Death Responsible: • FWD • Provinces • Districts • Local levels	
		MDSR/MPDSR committees are established and functional at the national level	Committee reformed as per the revised guideline	- Regular committee meetings every trimester Responsible: • FWD	TA from WHO-CO MCGL UNICEF
	The function of the MDSR/ MPDSR committee	Functions as indicated in training sessions Review process/ distribution of roles/ structured meeting	Partially	New committees are being formed as per the revised guideline, need to further strengthen the committees • FWD • Provinces • Districts • Local levels • Hospitals	TA from WHO-CO MCGL UNICEF
	Measures to ensure "No name No blame culture"	Code of conduct is available and adhered to in MDSR committee meetings[2]	There is no separate code of conduct, principles mentioned in the guideline are similar and are adhered to	Need to ensure adherence to "No name No blame culture" • FWD • Provinces • Districts • Local levels • Hospitals	TA from WHO-CO MCGL UNICEF
		De-identified details are included in MDSR/MPDSR review documents	NO, the format includes patient and service provider's identity for ease to follow-up from central level	Emphasize on unique id in every case Responsible: FWD / Provinces / Districts / Local levels / Hospitals	TA from WHO-CO MCGL UNICEF
		Other measures – please describe	During analysis the identity are removed	----------	TA from WHO-CO MCGL UNICEF
Case identification and Notification	Case definition for notification	MD definitions for notifications are compatible with WHO MD definitions (pregnancy-related	Yes	----------	TA from WHO-CO MCGL UNICEF

[2] Refer to Maternal and Perinatal Death Surveillance and Response: Materials to Support Implementation (Resource material)

Audit Cycle	Subtopic	Estimate the level of implementation	The current level of implementation	Plans for further improvements based on training programme Responsible person.	Any TA/FA Are needed for further actions
		death, maternal death, late maternal death)			
		Facilities are notifying MD within 24 hours (estimate the percentage)	**Partial, most facilities notify in the Viber group**	**Onsite visit and monitoring to encourage and ensure notification within 24 hrs** • **FWD** • **Provinces** • **Districts**	
		Community MD are notified within 48 hours	**Partially, The guideline requires notification of death within 24 hrs.**	**Need to expand community MPDSR** **Biannual / annual review and orientation** **Monitor to encourage and ensure notification within 24 hrs of death** **Responsible:** • **FWD** • **Provinces** • **Districts** • **Local level**	**TA from WHO-CO MCGL UNICEF**
		Mechanisms are available to actively identify MD occur in Non-Obstetric ward settings (ICU / HDU / OPD / Surgical and medical ward/judicial medical site)	**Partial**	**Most hospitals are oriented and notify such deaths to Obstetrics. Need to orient all non-obstetric departments on reporting MDs** **Responsible:** • **Provinces** • **Districts** • **Hospitals**	**TA from WHO-CO MCGL UNICEF**
	Zero reporting	Zero reporting is happening from all the facilities/ regions	**Partial, Most facilities do zero reporting of MDs in the perinatal death review summary form**	**Need to emphasize on zero reporting as part of system strengthening** **Responsible:** • **FWD** • **Provinces** • **Districts** • **Hospitals**	**TA and FA from WHO-CO MCGL UNICEF**
The review process and determined COD	**ICD-MM classification and coding**	The practice of ICD MM in MDSR review committee and categorized deaths into ICD MM categories	**Yes, the new revised forms have classification of deaths as per ICD-MM**	**Need further capacity enhancement for ICD-MM and ICD-PM coding** **Responsible:** • **FWD** • **Provinces** • **Districts**	**TA and FA from WHO-CO MCGL UNICEF**

Audit Cycle	Subtopic	Estimate the level of implementation	The current level of implementation	Plans for further improvements based on training programme Responsible person.	Any TA/FA Are needed for further actions
				• Hospitals	
		Regular training is being conducted for Ward doctors and to review panel / MRO / on ICD MM	Yes	Training has started and will be continued Responsible: • FWD • Provinces • Districts • Hospitals	TA and FA from WHO-CO MCGL UNICEF
	MCCD	Use WHO MCCD form (if there are modifications, please describe)	Yes, the revised forms have MCCD form Modifications: -Detailed case summary - Three delays -Pregnancy check box	Already started at hospitals and community. Need to further strengthen through regular monitoring and onsite coaching Responsible: • FWD • Provinces • Districts • Hospitals	TA and FA from WHO-CO MCGL UNICEF
		Pregnancy box included in MCCD	Yes	----------	
Case identification and Notification	Case definition for notification	Stillbirth definitions for notifications are compatible with WHO SB definitions	Yes	Ensure adherence to definition through regular monitoring Responsible: • FWD • Provinces • Districts • Hospitals	TA from WHO-CO MCGL UNICEF
		Newborn death compatible with 0-7 days	Yes	Ensure adherence to definition through regular monitoring Responsible: • FWD • Provinces • Districts • Hospitals	TA from WHO-CO MCGL UNICEF
		Facilities are notifying SB/ ENND within 24 hours (estimate the percentage)	No, they fill the PDR form within 72 hrs of death then enter the PDR summary form once a month in the web based system	Regular monitoring and follow up to ensure timely notification Responsible: • FWD • Provinces • Districts • Hospitals	TA from WHO-CO MCGL UNICEF
		Community SB are notified if yes indicate time	No	Perinatal death not captured from community	----------
		Mechanisms are available to actively identify ENNDs occur in	In some facilities, not all	Need to orient departments where cases can be captured, other than Obstetrics and	TA and FA from WHO-CO

Audit Cycle	Subtopic	Estimate the level of implementation	The current level of implementation	Plans for further improvements based on training programme Responsible person.	Any TA/FA Are needed for further actions
		the ward and HDU/ICU and other surgical settings.		gynecology and Pediatrics Responsible: • Provinces • Districts • Hospitals	MCGL UNICEF
	Zero reporting	Zero reporting is happening from all the facilities/ regions on SB and ENND	Yes, from most MPDSR implementing facilities	Regular monitoring and follow up to ensure zero reporting Responsible: • FWD • Provinces • Districts • Hospitals	TA and FA from WHO-CO MCGL UNICEF
The review process and determined COD	**ICD-PM classification and coding**	The practice of ICD PM in the MPDSR review committee and categorized deaths into ICD PM categories	Yes, the revised PDR form includes classification of perinatal death using ICD-PM codes	Need to further strengthen ICD-PM coding through regular monitoring and onsite coaching Responsible: • FWD • Provinces • Districts • Hospitals	TA and FA from WHO-CO MCGL UNICEF
		Regular training is being conducted for Ward doctors and to review panel /MRO/ on ICD PM	Yes	Training of doctors has started and is ongoing Responsible: • FWD • Provinces • Districts • Hospitals	TA and FA from WHO-CO MCGL UNICEF
Analyze information & presentation	**Analysis**	in 3 delay model and identify modifiable factors	Partial, there is still a gap in identifying delays and modifiable factors	Need capacity building, coaching and regular monitoring to ensure identification of delays and modifiable factors, completeness of the forms Responsible: FWD Provinces Districts Hospitals	TA and FA from WHO-CO MCGL UNICEF
		MMR/SB/PND data generate from MDSR/MPDSR committee	No, MPDSR is not implemented nationwide	Need to expand nationwide Responsible: • FWD • Provinces • Districts	TA and FA from WHO-CO MCGL UNICEF
		Availability of MMR/SB/ /COD information in HMIS	MMR not available SB and CoD will be available in HMIS from this year	Orientation on the revised HMIS- ongoing	----------

Audit Cycle	Subtopic	Estimate the level of implementation	The current level of implementation	Plans for further improvements based on training programme Responsible person.	Any TA/FA Are needed for further actions
			(HMIS revised)		
		Triangulation of data sources of MMR /SB/PND Name the sources	NDHS, UNMMEIG, Post Census National Maternal Mortality Study-2021	----------	----------
Recommending & implementing actions	**Recommendations**	Recommendations are formulated in a SMART way using a standard format	Format exists but gap in formulation of SMART actions	-Capacity building for formulating response -Regular monitoring Responsible: • FWD • Provinces • Districts • Hospitals • Local level	TA and FA from WHO-CO MCGL UNICEF
		A consolidated report of Recommendations is developed to review the progress	At some provinces At National level	Encourage biannual/annual review at provinces Develop factsheet annually Responsible: • FWD • Provinces • Local levels • Hospitals	TA and FA from WHO-CO MCGL UNICEF
		A uniform meeting report template is available to record minutes and recommendations	No		
		Summary of Recommendations are shared with higher levels	From some provinces during review meetings	Capacity building for formulating response and sharing with higher levels Responsible: • FWD • Provinces • Local levels • Hospitals	TA from WHO-CO MCGL UNICEF

Annexure – 7

Hospital level functioning of MPDSR

A. Paropakar Maternity Hospital

Established in 1959, this is the first maternity hospital of Nepal. The hospital has a birthing center, labour rooms, 3 emergency theatres, 4 gynecological theatres (used for elective CS), blood bank and MNS antigen blood grouping system. It is manned by 45 obstetricians, 3 paediatricians and 8 anesthetists (6 anesthesia assistants). All the patient admissions and investigations are computer-based. Approximately 24600 deliveries take place in the hospital with a Caesarean Section (CS) rate of 37%. Four maternal deaths and 688 perinatal deaths (PND) (527 – IUD, 89 – Fresh stillbirths, 195 NNDs) were reported in the last year.

MDSR

Formal MDSR in Nepal was first started in this hospital. At present, when there is a maternal death, MDR forms are filled within 24 hrs by the resident doctor on call for the day and MDSR committee reviews the case within 72 hrs. MDSR committee constitutes of director, deputy director, 4 obstetricians, anesthetist, matron, nursing sister in charge, medical recordist, a representative from accounts and administrative sections. The MDSR and the healthcare team involved in the management of the index case participate at the review meeting.

Case presentation is done by a resident, and it is opened for discussion. Original clinical records are perused. Cause of death is determined in a consensus reaching process. Issues are identified, 3 – delays are assessed, preventability is determined, and recommendations and actions are suggested for 3rd delay. Hospital working protocols are followed in auditing the case management. Legal indemnity has not arisen as an issue up to now. The outcome is entered in to the web-based MPDSR system by the medical recordist.

PDSR

In the past only the number of PNDs were collected. Clinical teams discussed neonatal deaths (NND) in the morning review meeting. Since 7 years back, detailed review of NNDs is conducted. Formal PDSR was also first started in Paropakar hospital.

If there is an NND, the on-duty medical officer (usually a paediatric resident) fills the PDR form. The death is discussed at the morning ward meeting. A death review is conducted at the department meeting with the participation of duty doctors, consultants (n=3) and residents. No obstetric or nursing representatives. MO presents the case with original clinical records in the sequence of events. Deaths are classified according to ICD-PM. Cases are audited based on unit protocols. These protocols align with national training manuals. In response to findings, unit procedures were revised. Usually, proceedings are not documented. The outcome is communicated to hospital director verbally.

Perinatal death review meeting is chaired by hospital director and participated by obstetric and paediatric teams and senior nursing officers. Members of the MPDSR committee also attend the meeting. Two to three cases are selected and shared with obstetric teams. Usually,

intrapartum stillbirths and NNDs are discussed. MOs do the presentations. Earlier the review tends to find fault. However, at present review environment is constructive. Medical recordist documents the proceedings. Recommendations are entered in a register. Implementation of the recommendations are carried out by relevant officials. However, the completed formats are idling. Medical recordists do not enter data into the web-based system.
Only 2 monthly PDSR meetings were conducted for the past fiscal year. No individual case discussions take place.
WHO guidelines are followed in MPDSR. WHO supported in development of formats, guidelines and trainings. WHO support is needed for refresher training. The MPDSR focal point perceives that WHO should monitor the activity frequently. WHO is playing a pivotal role and it should be sustained.
Clinical teams should internalize the need for MPDSR -the motivation is crucial.

B. Patan Hospital (PAHS)

On average 6000 deliveries per year. Only 2 maternal deaths (MD) in the previous year (One due to covid19 and the other one transferred from another hospital). An MPDSR focal point (a feto-medicne specialist) is in action since 5 years back.

MDSR

When a MD occurs, the sister in charge notifies it to the head of the Gyanecological department and the medical recordist. She facilitates a review meeting with the participation of clinical teams who were involved in the management of the index case (Including ICU and anaesthesis staff), paediatrician in charge, director, nursing director, medical recordist. This is done in the meeting room of the obstetric department chaired by the director. Residents present the case. It is opened for an interactive discussion in a non-threatening environment. Cause of death (CoD) is assigned in a consensus-reaching process. Cases are reviewed based on available guidelines (NESOG and departmental). Three-delays and preventability are assessed. Recommendations are formulated with a responsible person assigned. Proceedings are documented by residents and supervised by MPDSR focal point. Confidentiality is maintained. Minutes are given to medical recordist.
The issues identified were; No formal mechanism is in place to monitor the progress of the implementation. No formal MPDSR training for the hospital team was conducted by FWD. Neither hard copy of management guidelines or any wall charts could not be located.

PDSR

Additional focal point for PDSR is available in the hospital. Confirmation of the death of stillbirths and NNDs is done by paediatric teams. Such deaths are discussed in the morning handover time. Data are collected on the cases. Every third Friday, the monthly PDSR meeting is held with the participation of heads of Gyanecology and Paediatric departments, nursing director, members of the entire department (including NO). Occasionally head of the hospital participates. Each and every case is presented by obstetric and paediatric teams and are discussed. Individual case formats are filled by residents. Proceedings are documented. Actions / Recommendations are formulated. At the end of the year, an annual analysis of mortality is undertaken. Scientific publications are also undertaken. Feedback is given by FWD. Hospital

review meetings are conducted by FWD. it was done even in the last year. Reported deaths were discussed and useful inputs were given.

C. Seti Provincial Hospital

This hospital caters around 10000 women for their deliveries annually. Manned with 5 obstetricians and 3 anesthetists, it records a CS rate of 13%. A 24 /7 on call obstetrician stays in the hospital.
Last year there were 3 maternal deaths and this year so far 2 deaths were reported.

MDSR

Maternal deaths are notified within 24 hrs and the on-call obstetrician fills the MDR form. MPDSR committee (Medical Superintendent, Chairman of hospital development committee (HDC), Obstetricians, Nursing Officers) review the case history and identify the issues. Obstetrician last managed the patient presents the case. CoD is ascertained and preventable factors are identified. Feedback is given to director and chairman of HDC. Actions are taken then and there. Proceedings are documented by the medical recordist.
An example of response was highlighted: A woman with post-partum haemorrhage was admitted to ICU after the surgical intervention and died of fluid overload. The obstetrician did not recognize it when she developed shortness of breath. Physician was called late. One action was to seek the support of other specialities early through a multi-disciplinary team meeting.

PDSR

PNDs are counted, forms are filled and sent to medical recordist. Every last Friday of the month, PDSR meetings are conducted chaired by hospital head. Only preventable PNDs (fresh stillbirths and NNDs) are discussed. Cases are presented by paediatrician and sometimes by obstetrician. Actions are contemplated based on the findings.

Professional colleges are not involved in provincial level MPDSR. Provincial chapters of NESOG / PESON are not registered.
WHO supported for strengthening medical record section. MPDSR training was received by hospital team. Refresher training is required. No other agencies are supporting MPDSR.

D. Nepalgunj Medical College Teaching Hospital – Kohalpur

This is a referral center receiving cases even from nearby districts. It has a well-established obstetrics and gynaecology department with two assistant professors, four lecturers and seven residents. There are one neonatologist and four assistant professors of paediatrics. Approximate number of deliveries for last year was 6100 with a CS rate of 22%. Last year 11 maternal deaths, 171 stillbirths (28 fresh and 143 macerated) and 55 ENNDs were reported.

MDSR

When a maternal death occurs, obstetrician fills the form. MPDSR committee constitutes of hospital director, deputy director, department head (obstetrics), obstetricians, paediatrician, nurse in charge, matron. Review meeting is conducted with involved consultants and

representatives from district public health office. Case presentation is done by the resident and the CoD is determined and actions are formulated for issues identified at the meeting. Actions are documented in the MPDSR register with a responsible officer assigned. A copy of the MPDSR is sent to DHPO.

PDSR

In PDSR, attending medical officer fills the PDR form. After each NND, a review meeting is conducted. Monthly PDSR meetings are chaired by hospital director and are not regularly conducted, only two meetings were conducted over the last seven months. Only selected cases are discussed and thecases are presented by the paediatrician. Proceedings are documented and the Medical recorder submits the filled forms in to the web system.

Issues identified were; Summary PND form is confusing. This has led to a reduction in the forms. Orientation on the form is not satisfactory. Refresher training is crucial for the entire team.

Following suggestions were put forward; A regular supervision and monitoring system should be established. Periodic capacity building on MPDSR should be considered due to frequent changeover of human resources.

E. KIST Medical College and Teaching Hospital

The hospital was started in 2006. It operates independently as a private medical college and is not affiliated with the government. There are two paediatric units (60 beds), seven bedded NICU and a nursery with seven beds. Eight paediatricians work in the hospital butno neonatologists are available. There are residents and interns with 15 nursing officers. Hospital caters to 1450 deliveries in a year. On an average 5 -6 neonatal deaths are reported per year. The leading causes are; sepsis, prematurity and birth asphyxia.

MPDSR reviews were started from the beginning. The MPDSR committee includes hospital director, administration head, paediatrician team, obstetricians, Nursing officers in charge of obstetrics and paediatrics units, matron and medical recordist. Others (anesthesiologist, pharmacist etc) are coopted based on the case. An MPDSR coordinator is appointed alternatively from obstetrics and paediatrics for each year. PDSR activity was mainly focused in this hospital by the evaluation team. A NND is confirmed by the on-duty paediatrician with a valid CoD. Usually, no post-mortems are done. PDR format is filled by residents and cross-checked by the consultant. Case is discussed in the morning handover. A departmental review is organized every month (second Wednesday) chaired by the head of the department and participated by all the medical team. Nursing officer in charge participates if necessary. A medical officer is assigned for all audit purposes. Usually, all cases are presented by both obstetric and paeditric teams jointly following a summary statistical presentation. Cases are deidentified and “no name, no blame” environment is maintained during the discussion. CoD is revised based on the discussion and categorized with ICD-PM classification. Three-delays and preventability are assessed up on a consensus. Recommendations are formulated based on SMART components as far as possible and they are entered in the MPDSR register. At the end of the meeting, a follow up is undertaken for implementation of the previous

recommendations. Proceedings are documented and recommendations are usually implemented. Data are entered into the web-based system by the medical recorder. Almost all monthly PDSR meetings were conducted for the previous year. Periodic analyses of PNDs are undertaken. Based on the last analysis, sepsis was identified as the leading cause and this led to changing the NICU structure accommodating more infection control measures. A paper was published. Annual reports are published by medical recorder. A copy of the MDR format is kept with the patient's clinical records.

FHD conducts an annual progress review visiting the hospital. Feedbacks are given to hospital stakeholders. NPO – WHO visited the hospital. Guidelines on MPDSR were received. No specific funding for MPDSR was available. However, because the hospitals had difficulty in accessing the funds at local level, FWD has sent funds to district health offices. The hospital perceives that the WHO support for MPDSR is significant. If hospital teams could take the responsibility and accountability, with the close monitoring of FHD, MPDSR can be sustained even without WHO support.

Annexure – 8

Site visits and observation of the MPDSR system

A. Paropakar Maternity and Women's Hospital

Maternal deaths are reported in a designated format. Once the review process of the index case is over, the format is sent to Medical Record Division. At this unit, a team of officials maintain the records relevant to reported maternal death cases. Completed MDR forms along with other clinical records are put in a specifically designated folder – Maternal Mortality File. A few such files (n=12) were located in the racks. A documented response plan was observed in several MDR forms with an official assigned for the action. However, the two columns; timeline and monitoring, were not filled. A MPDR review meeting register for the years 2077/2078 was noted with attendance information. Several attempts were made to log into the web-based system to observe the data entry process. However, it was failed.

On average there are 35 – 40 PNDs occur per month. PND stillbirth forms are not filled either by doctors or nursing officers. The medical recorder mentioned that PDR forms are not received and not entered into the web-based system at present. The team claims that they had not received a formal training on MPDSR except participating in annual review meetings organized by FWD. FWD records indicate that a team of four from Paropakar Hospital (Obstetrician and Gynaecologist, Pediatrician, maternity in charge and medical recorder) received a two-day orientation on MPDSR in September 2021.

B. Patan Academy of Health Sciences (PAHS)

A systematic process of MPDSR information compilation was observed at Patan Hospital. All completed MDR forms were observed in an orderly manner. The chief medical recorder was not available. However, the team member was thorough with the entry and processing of MPDSR data in the web-based system. Although the individual PDR forms could not be located, there were multiple periodic (monthly) PDSR analyses done and shared with the relevant stakeholders. This was comprehensive and impressive.

A methodical system is in place for storing clinical records in the medical record section. The orderly process of location of files was commendable.

C. KIST Medical College and Teaching Hospital

MPDSR information and documents are maintained methodologically at the medical record section of the hospital. A satisfactory data compilation was observed. Completed MDR forms and Monthly PDR forms are kept in an orderly manner. The medical recorder demonstrated the entry and processing of MPDSR data in the web-based system. The data management system was impressive.

Storing of clinical records are orderly in the medical record section. Files with the bed head ticket of the index case is kept in a copy of the MDR format. MDR meeting recommendations are entered in the MPDSR register. Data are entered into the web-based system by the medical recorder. Monthly analyses of PNDs are undertaken and they are readily available.

D. Family Welfare Division (FWD)

The web-based MPDSR system and the central monitoring process of FWD were observed. The data system operates in DHIS-2 platform. The MDR and PDR summary forms are in English language while the death notification, screening and verbal autopsy forms, for deaths in the community, are in Nepali language. Web-based MPDSR is implemented in 94 hospitals (covering 58 districts / including private hospitals) and community MPDSR in 27 districts (out of 77) as of November 2022. Each hospital has been given user credentials to log into the system. Hospital and community based individual maternal and perinatal mortality data can be visualized at the central level. The hospital MDR form to be filled for maternal deaths in the hospitals is of eight sections (9 pages) and the verbal autopsy form including cause of death assignment for deaths in the community is of 11 sections (17 pages). Monthly summary data of hospital perinatal death meetings are available in the system. Individual perinatal death data are filled by facilities but they are not entered in the web-based system at central level.

A number of reports can be generated and downloaded as an excel sheet. A monthly perinatal death summary data analysis for each facility could be generated. WHO focal point at FWD and an official monitor the data entry, completeness and quality of data. However, there is no specific official designated for MPDSR from FWD. Monitoring and follow up of individual maternal and summary of perinatal deaths are still in the hands of WHO. Data gaps and discrepancies are conveyed to data originators over the phone and through feedback in the web-based system. Usually, no written communications are done.

A Viber group is in operation to notify the number of maternal deaths that occur in both facilities and community. While there is a formal notification process in the web-based system to notify deaths that occur in the community, there no formal notification process in place, not even in web-based system to track probable maternal deaths that occur in facilities. The notification of maternal deaths that occur in the facilities, including ZERO reporting, is done through the monthly Perinatal Death Review Summary form. Even though the estimated number of maternal deaths is nearly 1100 (based on 2017 UNIGME estimations) for an estimated live birth of 600,000 (79% of skilled birth attendance), number of individual, maternal death data available at web-based system is well below. It is only 176 maternal death records that available in the web-system for year 2021/2022 (Figure – 8). Community level data generation is also not satisfactory. From 13 districts, 20 cases of deaths in the community have been reported through verbal autopsies in 2021/2022. The local levels also conduct verbal autopsies for facility deaths of women residing in respective local levels. In such cases, the information obtained from community verbal autopsy supplements the information received from facility MDR process.

Hospital data origination is problematic and central level faces numerous difficulties in facilitating data entry and maintaining data quality. Data monitoring at central level is not methodical and not up to the expected level. Data triangulation has not been considered. Even with the direct access provided to FWD for Hospital Mortality Register by HMIS division, it is not evident whether the opportunity was utilized for capturing MD and PND. It is surprising that VA model has not been introduced in Kathmandu area which consists of 20 palikas.