Maternal and Perinatal Mortality Surveillance and Response (MPMSR) in Rohingya Refugees camps in Cox's Bazar, Bangladesh

Annual Report 2020

Supported and Implemented by:

Health Sector

Sexual Reproductive Health Working Group (SRH-WG)

Community Health Working Group (CHWG)

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Abbreviations:

ANC	Antenatal care
BEmONC	Basic emergency obstetric and newborn care
CBS	Community based surveillance
CDC	Center for Disease Control and Prevention
CEoMNC	Comprehensive emergency obstetric and newborn care.
CHW	Community health worker
CHWG	Community health working group
COVID-19	Coronavirus disease 2019
CVD	Cardiovascular diseases
EBS	Event based surveillance
EmONC	Emergency obstetric and newborn care
EpiWG	Epidemiology working group
EWARS	Early warning, alert and response system
HR	Human resource
ICD10	International classification of diseases, tenth revision
ICD10MM	International classification of diseases, tenth revision, maternal mortality
MPMSR	Maternal and perinatal mortality surveillance and response
NGO	Non-governmental organization
SARI	Severe acute respiratory infections
SRH	Sexual and reproductive health
SRH WG	Sexual and reproductive health working group
TBA	Traditional birth attendance
UHC	Upazela health complex
UNHCR	United Nations High Commissioner for Refugees
W.H.O.	World Health Organization
WRA	Woman of reproductive age
VA	Verbal autopsy
VHF	Very high frequency

Chapter 1: Introduction

In response to the massive influx of Rohingya refugees in Bangladesh in the last few years, efforts to manage this large-scale humanitarian emergency have been established, including the development of a **maternal mortality surveillance system**. A partnership between the United Nations Population Fund (UNFPA), the United States Center for Disease Control and Prevention (CDC), and the Center for Injury Prevention and Research Bangladesh (CIPRB) was formed in September 2018 to guide the development of the surveillance system. Since then, the partnership has worked alongside the Sexual and Reproductive Health Working Group (SRH WG), Community Health Working Group (CHWG), Epidemiology Working Group (EpiWG) under the overall guidance of the Health Sector to establish and implement a robust Maternal and Perinatal Mortality Surveillance and Response (MPMSR) system.

A view from one of the refugee camps in Cox's Bazar ©UNFPA Bangladesh/Fahima Tajrin

Measurement of maternal mortality among the Rohingya refugee population has progressed over time starting with a retrospective Reproductive Age Mortality Study (RAMOS) from August 2017 to August 2018. [1] The RAMOS report (2019) by CDC Atlanta and UNFPA informed and initiated the development of the Maternal and Perinatal Mortality Surveillance and Response (MPMSR) in the Rohingya refugee response. This report highlighted that **Women of Reproductive Age (WRA) deaths and neonatal deaths accounted for 28% of the total deaths in the span of one year from August 2017 to August 2018**. [2] The need for continuous surveillance and reporting of maternal deaths from the community and facility was noted. Subsequently, the Sexual and Reproductive Health Working group led by UNFPA, under the Health Sector Coordination, supported by the CHWG and the Epi-WG established the Maternal and Perinatal Mortality Surveillance and Response for Rohingya refugee response. The most significant development in the scope of mortality surveillance was the introduction of **Community-Based Surveillance (CBS) with the help of Community Health Working Group (CHWG) lead by UNHCR and NGO**, which enabling collection of the general mortality data for the Early Warning, Alert, and Response (EWARS) system, developed by W.H.O.

Field monitoring visit in camps in one of the UNFPA supported Community health network areas ©UNFPA Bangladesh

The EWARS is part of the routine health surveillance systems that detects and generates an alert for any public health event that needs an immediate response, including deaths in the facilities. In the Rohingya refugee response, the EWARS was further customized to capture community deaths occurring outside the health facilities, an innovation that strengthened CBS.[3,4] It integrated components of the existing mortality system (including maternal mortality) for timely notification of deaths of WRA, verbal autopsies for WRA deaths to determine causes of death for community-based mortality was established. Later, a complementary system was introduced to review the facility-based maternal mortality from the Rohingya refugees' population. However, perinatal mortality surveillance is yet to be established due to the technical limitations.

Chapter 2: Overview of the Maternal and Perinatal Mortality Surveillance and Response (MPMSR)

Maternal and Perinatal Mortality Surveillance and Response is defined as a continuous cycle of identification, notification and review of maternal and newborn deaths followed by **actions to improve quality of care and prevent future deaths.** It works by involving all stakeholders in the process of identifying maternal deaths, understanding why they happened and taking action to prevent similar deaths occurring in the future.[5]

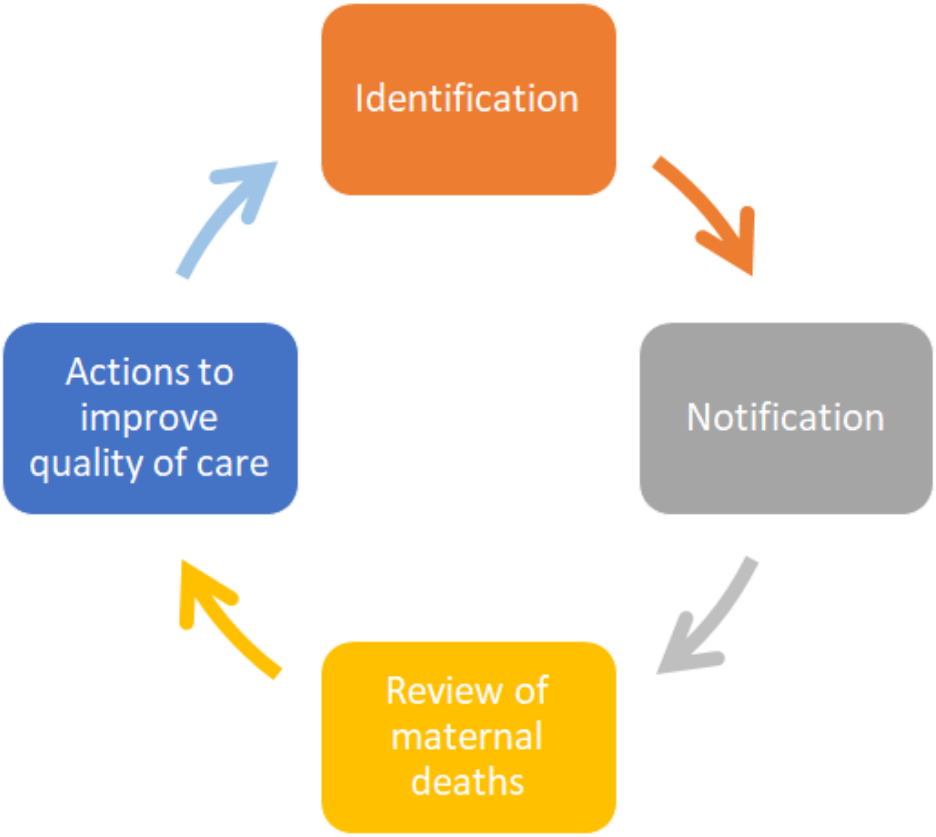

Figure 1: Core process of Maternal Death Surveillance

The objectives of Maternal and Perinatal Mortality Surveillance and Response (MPMSR) for Rohingya refugee response are as follows:

1. To highlight **all elements that contributed** to the deaths in order to work on those elements and avoid similar deaths in the future;
2. To understand the **circumstances** around the deaths;
3. To precisely identify the **causes** of deaths;
4. To **improve** access and quality of safe motherhood programming (i.e.: antenatal care, delivery, postnatal care, post abortion care), with particular focus on **Emergency Obstetric Care** to prevent future maternal and neonatal morbidity and mortality.

A postnatal care visit of a baby in one of the UNFPA-supported health facilities ©UNFPA Bangladesh/Fahima Tajrin

The MPMSR is based on anonymity, non-blaming, non-punitive approach and fosters participation at all levels for identifying maternal and neonatal deaths and stillbirths. Improving the surveillance and reporting of maternal deaths is critical to identify avoidable risk factors of maternal deaths. Thus, all the maternal deaths reported are reviewed, irrespective of the place of death i.e. at home, in facility, in transit or anywhere in the community. Maternal mortality review process is primarily undertaken at two levels: **i) Facility level** and **ii) Community level**

Community Based Maternal Mortality Surveillance and Response:

Community based **Maternal and Perinatal Mortality Surveillance and Response** is a **method of identifying personal, family or community factors that may have contributed to the death by interviewing people such as family members or neighbors who are knowledgeable about the events leading to the death**. In this process all the Women of reproductive age deaths were reviewed by verbal autopsy method.

All the interviews were conducted by a group of Verbal Autopsy Assessors trained in maternal verbal autopsy by the experts from CDC, Atlanta and UNFPA using the Verbal Autopsy Tool. Nearly 60 CHW supervisors and

UNFPA Community health workers visit door-to-door in the refugee camps to check the status of women of reproductive age and pregnant mothers ©UNFPA Bangladesh/Fahima Tajrin

midwives were trained in verbal autopsies and were supporting the community-based maternal mortality surveillance till September 2020. However, now the sector has a team of dedicated VA assessors (Midwives) on the ground. All the community based reviews were taken up for all WRA deaths that occur in the specified geographical area, irrespective of the place of death, be it at home, facility or in transit.

Verbal autopsy team performing verbal autopsy at the home of the deceased women in the rohingya camp ©PHD-UNFPA/ Ribica Chowdhury

Facility Based Maternal Mortality Surveillance and Response:

Facility Based **Maternal Deaths Reviews** were undertaken with the objective of improving the quality of services and responsiveness of the facility to obstetric emergency situations by assessing the details of services provided and by interviewing the health care providers and close family members if needed. It is a process of drawing lessons from the past chain of events and preventing recurrence. All the health facilities within the camps are under this review system.

MPMSR Sub-committee conducting facility based maternal death review at Hope field hospital ©RTMI/UNFPA - Debashish Dey

The COVID-19 pandemic in the initial part of 2020, impacted the facility death review and the community based surveillance. However, with modifications to online death reviews for instance, the surveillance activities were sustained through the pandemic.

Chapter 3: Community Based Maternal Mortality Surveillance - 2020 Observations

Through the CBS mechanism, a total of 144 WRA deaths were reported in the EWARS (WHO, January to December 2020) and Verbal autopsy (VA) conducted for all the WRA deaths - 100% completion rate. Out of the total WRA deaths, a higher proportion of deaths were reported as community deaths highlighting the poor health seeking behaviour of the population. 87 (60%) were community WRA deaths and 57 (40%) were facility WRA deaths. Furthermore, a total of 45 were confirmed as maternal deaths (31%) while 99 (69%) non-maternal deaths were identified through the cause analysis during the verbal autopsies. This highlights the importance of the implementation of community health interventions to improve maternal health conditions in this population.

Table 1: Details of the deaths recorded in the community surveillance

Characteristics of the recorded WRA deaths in Community based Surveillance	**Numbers N=144**
Total WRA Verbal Autopsies performed	144 (100%)
Community WRA deaths	87 (60%)
Facility WRA deaths	57 (40%)
Maternal deaths	45 (31.25%)
Non-Maternal deaths	99 (68.75%)

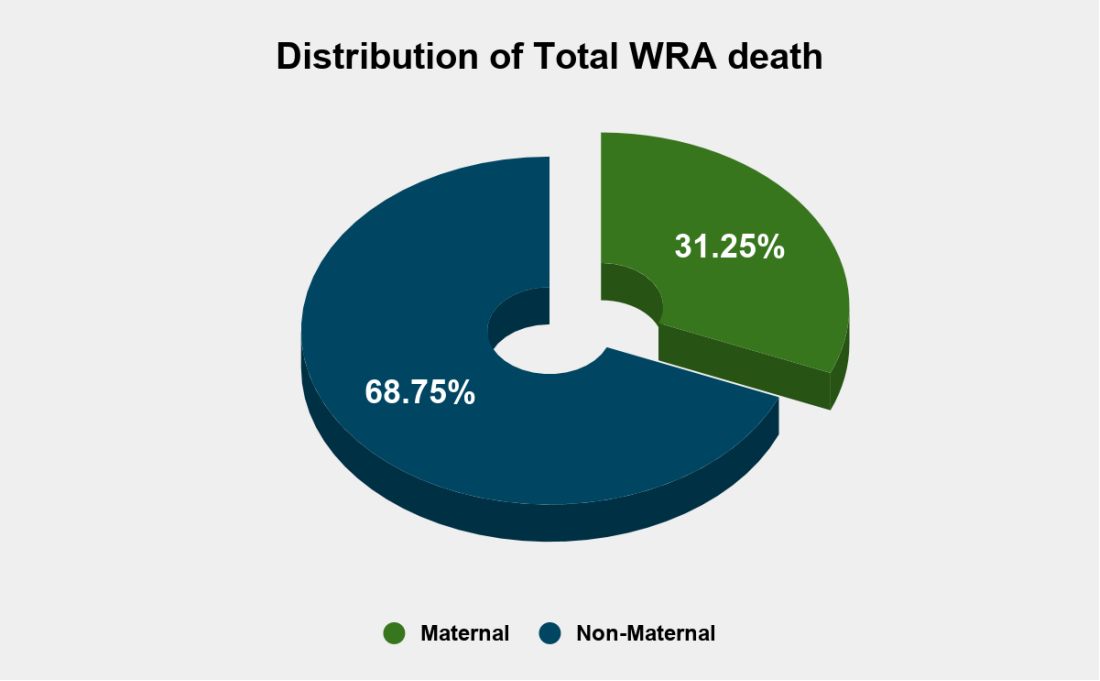

Figure 2: Distribution of WRA deaths (Maternal and non-maternal)

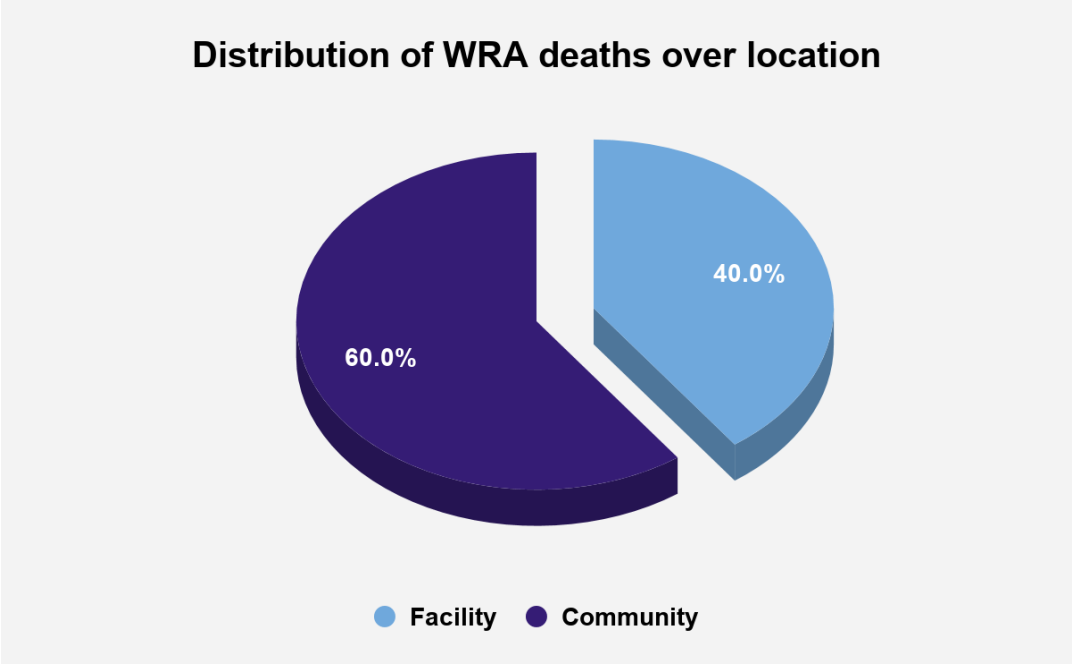

Figure 3: Distribution of WRA deaths over the location

Distribution of WRA deaths and Maternal deaths in the camps:

The distribution of WRA deaths showed the highest number of deaths (11 out of 144) were recorded from Camp-24 followed by 9 deaths from Camp-15, Camp-19 and Camp-7. Whereas the highest number of maternal death was observed to be from Camp 7, Camp 9 and Camp 14. The detail distribution of WRA deaths in the camps is shown in the graph below:

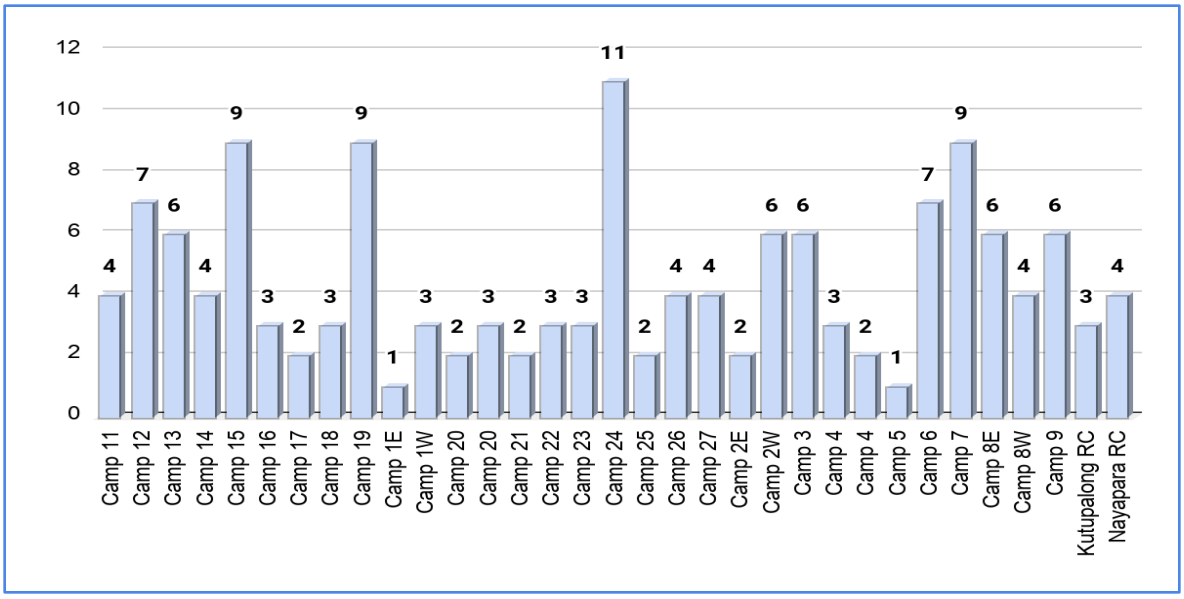

Figure 4: Distribution of the WRA deaths in the camps

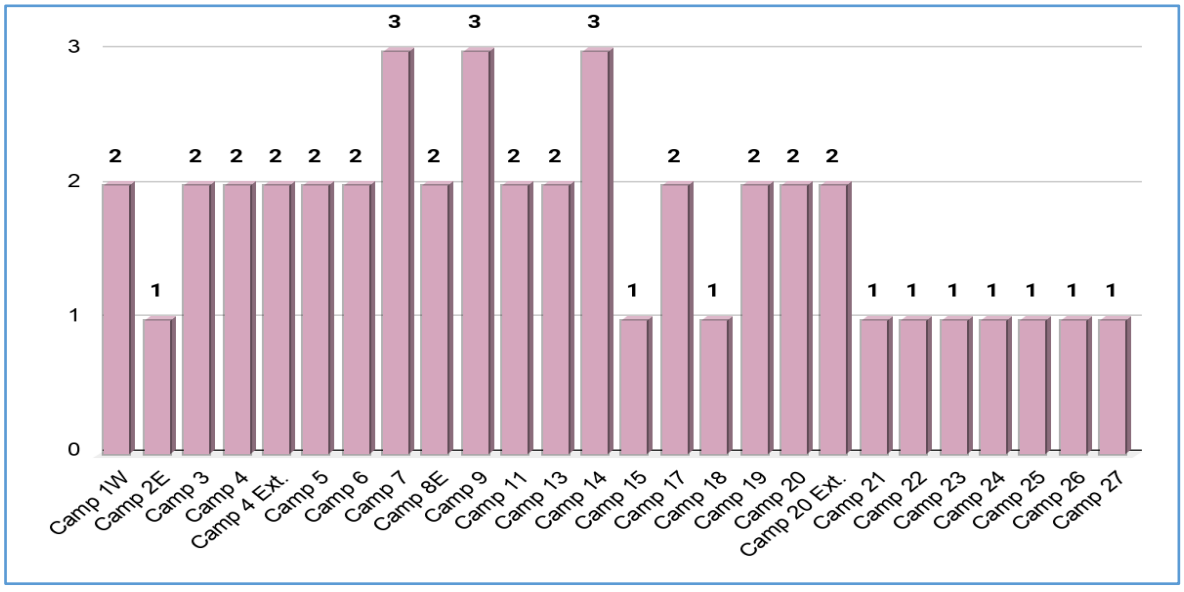

Figure 5: Distribution of Maternal deaths in the camps

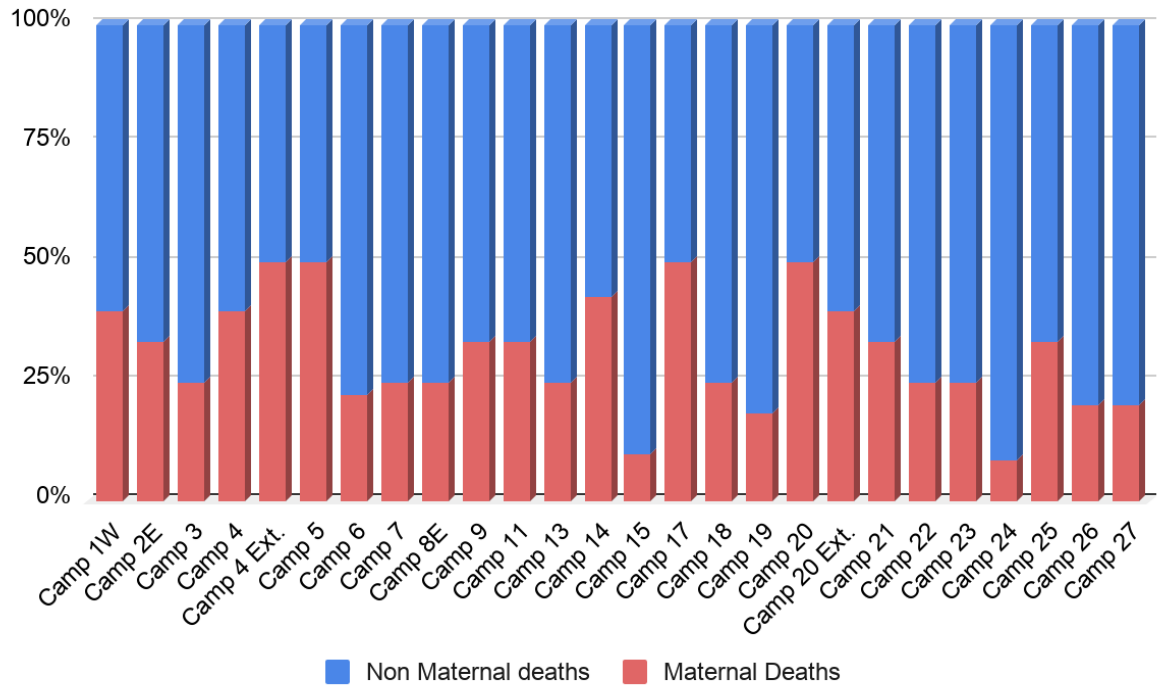

Figure 6: Stalked presentation of maternal and non-maternal deaths over camp area

Causes of WRA deaths:

Using the International Classification of Diseases (ICD) - 10 the cause of the WRA deaths were classified**. About 31.3% (45) of the WRA deaths were reported as pregnancy, childbirth and puerperium or maternal deaths**. The unknown cause of deaths accounted for 27.8% of the deaths. Among all WRA deaths 14.6% deaths were due to infectious diseases while 19.44% deaths were contributed by deaths from non-communicable diseases such as cardiovascular disease, cancer, endocrine, nutritional and metabolic diseases, neurological diseases and mental and behavioral disorders.

Table 2: Causes of WRA deaths in the camps according to ICD-10 classification

Cause of WRA deaths	Number of deaths (%)
Pregnancy, childbirth and puerperium	45 (31.3%)
Unknown	40 (27.8%)
Infectious disease	21 (14.6%)
Neurological disease	10 (6.9%)
Endocrine, nutritional and metabolic diseases	8 (5.6%)
SARI	5 (3.5%)
Other	5 (3.5%)
CVD	4 (2.8%)
Cancer	3 (2%)
Mental and behavioral disorder	3 (2%)

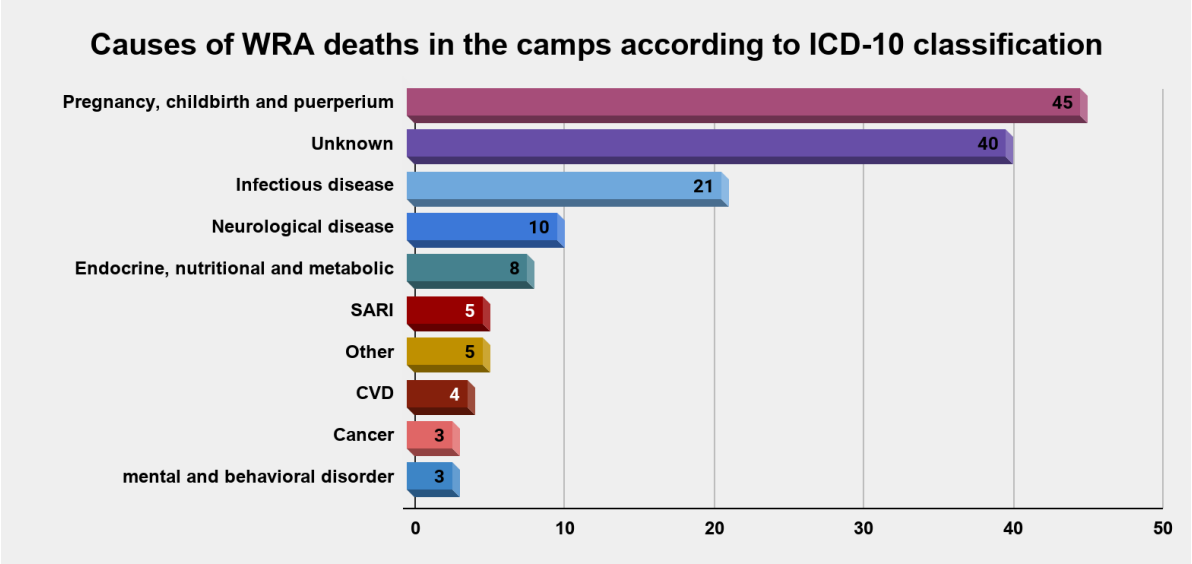

Figure 7: Causes of WRA deaths in the camps according to ICD-10 classification

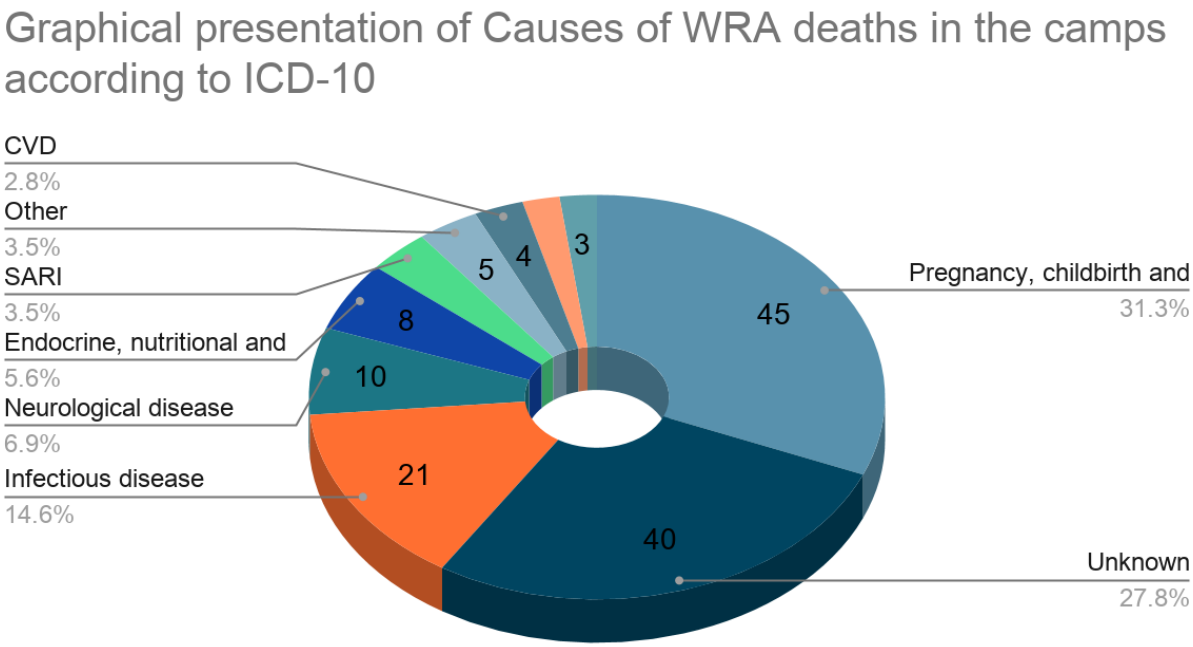

Figure 8: Graphical presentation of Causes of WRA deaths in the camps according to ICD-10 classification

Maternal deaths:

A total of 45 deaths were reported as pregnancy, childbirth and puerperium deaths in 2020 from the WRA surveillance. Out of 45 maternal deaths, 15 were pregnant at the time of death, 09 during delivery or within 2 hours of delivery, and 19 within 42days after delivery.

Table 3: Characteristics of the maternal deaths

Characteristics of the maternal deaths	Numbers of maternal deaths, N=45
Death during pregnancy	15 (33.33%)
Death during delivery or within 2 hours of delivery	9 (20%)
Death within 42 days of delivery	19 (42%)
Death followed by abortion	2 (4.44%)

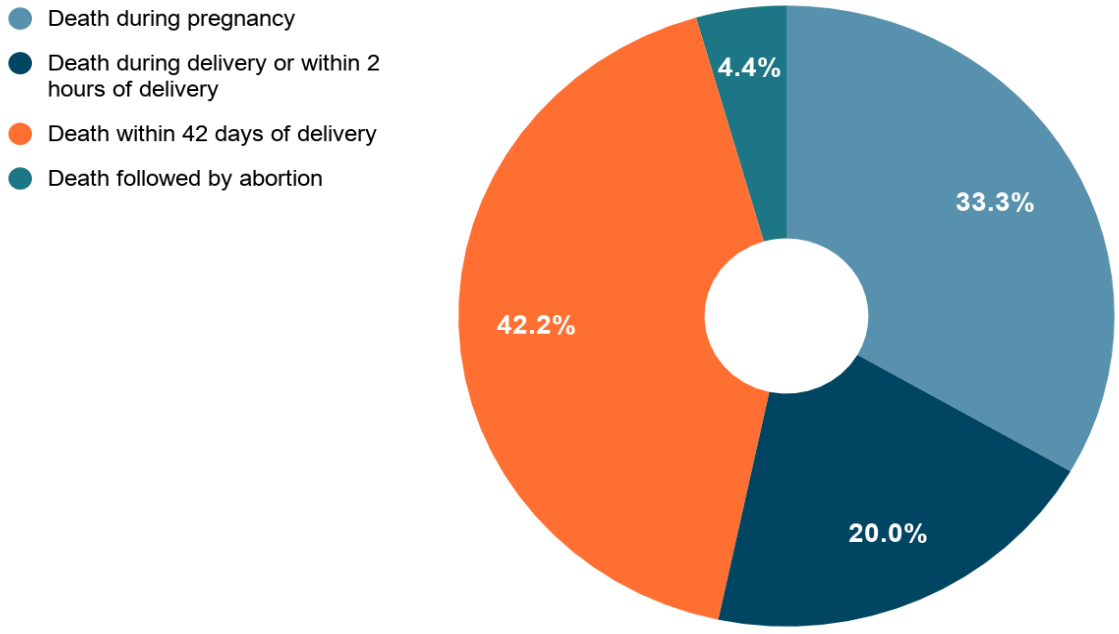

Figure 9: Graphical presentation of the characteristics of the maternal deaths

Table 4 Distribution of maternal deaths by locations

Total maternal deaths	Numbers of deaths (45)
Maternal deaths in the community	**13 (29%)**
Maternal deaths in the facility	**32 (71%)**

Causes of the maternal deaths according to the ICD-10 MM classification:

The major cause of maternal deaths was obstetric Haemorrhage 26.7 % (12), 8 were postpartum haemorrhage and 4 were Antepartum haemorrhage. The specific cause for death could not be identified for 22.2% of the maternal deaths. Whereas 20% of the deaths were due to eclampsia or preeclampsia. Followed by pregnancy related infection (13.3%).

Table 5 Causes of maternal deaths according to ICD-10 MM classification

Causes of maternal mortality according to ICD-10 MM	Numbers (N=45)
Obstetric Hemorrhage	12 (26.7%)
Unknown/undetermined	10 (22.2%)
Hypertensive disorders in pregnancy, stillbirth and the puerperium	9 (20%)
Pregnancy-related infection	6 (13.3%)
Unanticipated complications of management	4 (9%)
Other obstetric complication	2 (4.4%)
Pregnancy with abortive outcome	2 (4.4%)

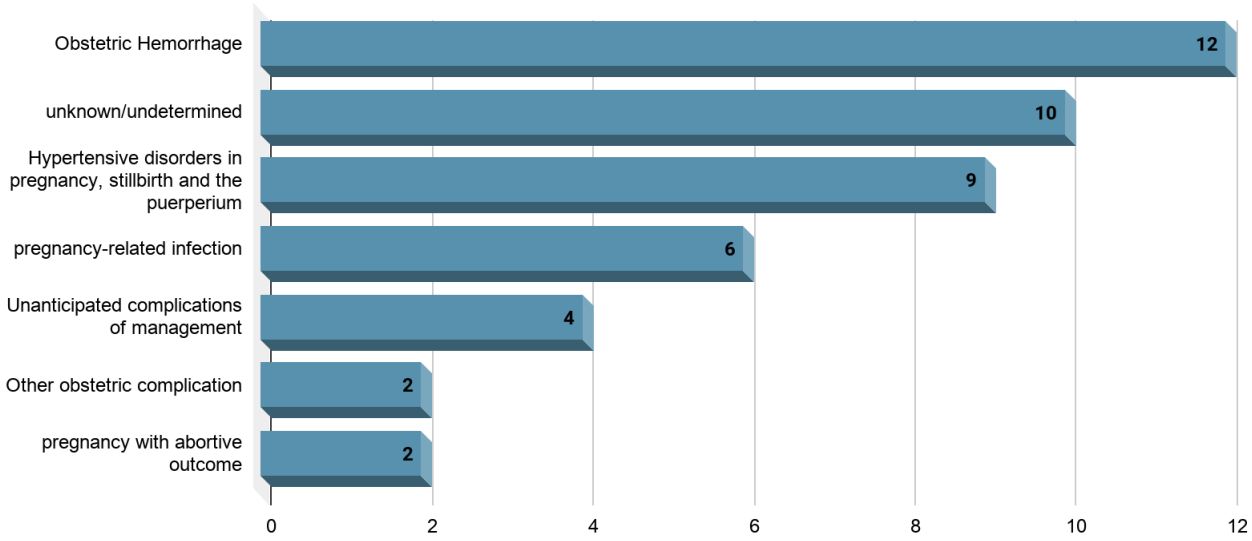

Figure 9: Causes of maternal deaths in camps according to the ICD-10 MM classification

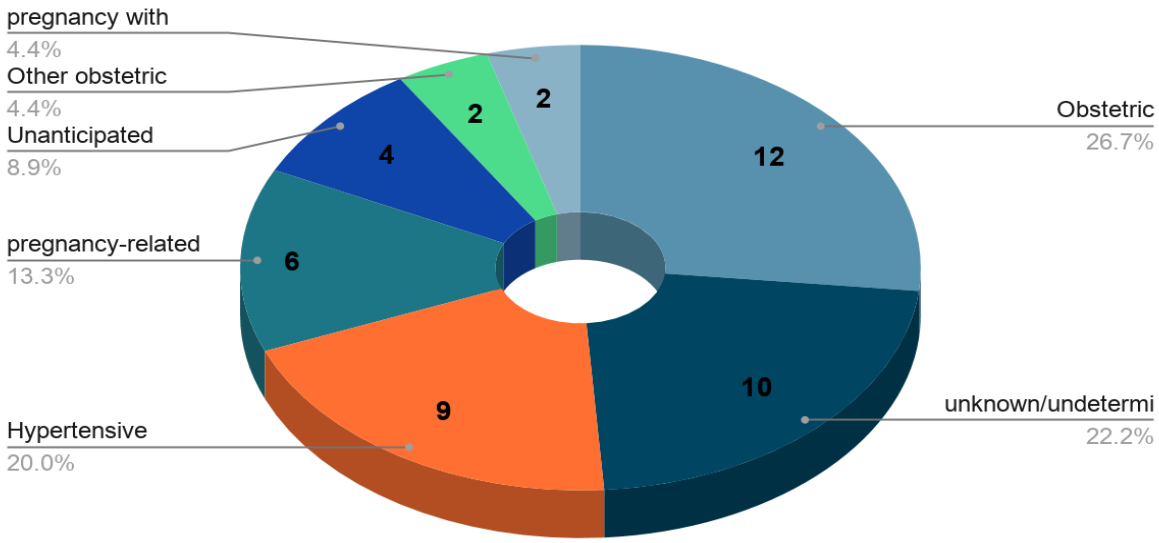

Figure 10: Causes of maternal deaths in camps according to the ICD-10 MM classification

Chapter 4: Facility Based Maternal Mortality Surveillance - 2020 observation

All the facility maternal deaths reported through the facility based maternal mortality surveillance system were reported directly by the health facilities. From January to December 2020, a total of 24 maternal deaths were notified to the MPMSR committee by the health facilities. All the maternal deaths were reviewed by the MPMSR committee. The major contributor of the facility based maternal deaths were obstetric hemorrhage (10), other pregnancy related complications (7), pregnancy related infections (2) followed by each case of Pregnancy with abortive outcome, Hypertensive disorders in pregnancy, childbirth and the puerperium, Unanticipated complications of management, Non-obstetric complications and Unknown/undetermined.

Table 6: Causes of Facility based maternal deaths according to ICD-10 MM classification

Causes of Facility Based Maternal Deaths according to ICD-10 MM classification	**Numbers of maternal deaths**
Obstetric Haemorrhage	10
Other obstetric complications	7
Pregnancy-related infection	2
Pregnancy with abortive outcome	1
Hypertensive disorders in pregnancy, childbirth and the puerperium	1
Unanticipated complications of management	1
Non-obstetric complications	1
Unknown/undetermined	1
Coincidental causes	0
Total	**24**

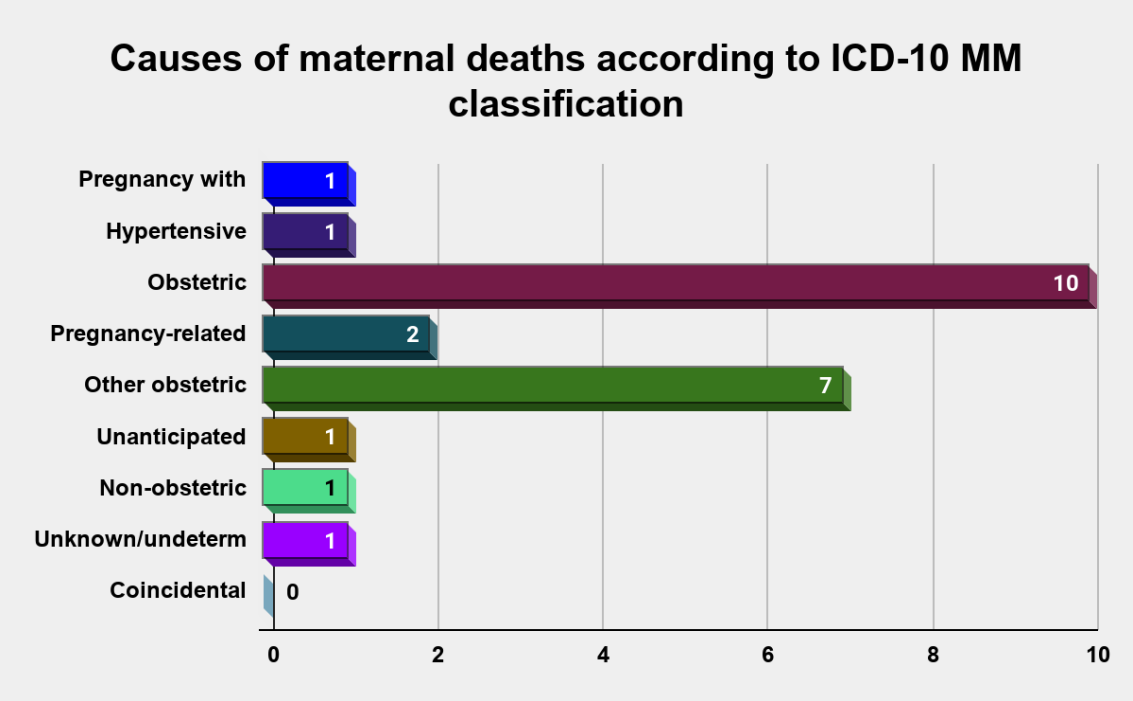

Figure 11: ***Causes of maternal deaths according to ICD-10 MM classification***

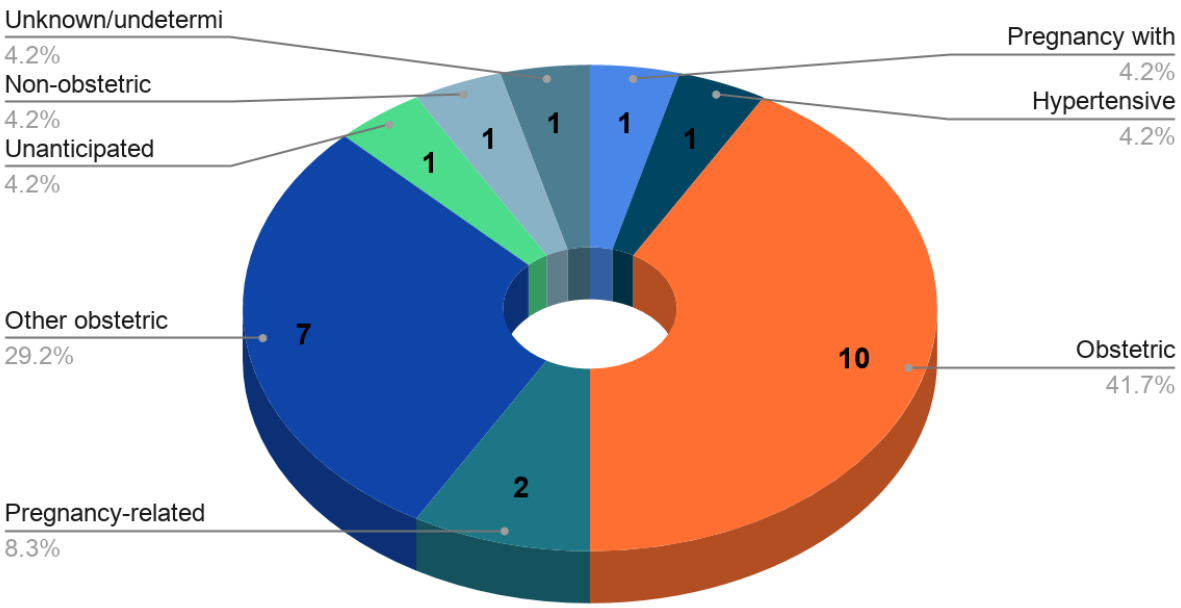

Figure 12: Graphical presentation of Causes of maternal deaths according to ICD-10 MM classification

Chapter 5: Analyzing MPMSR findings from the perspective of Three Delays Model

The three delays model is the most common framework used to evaluate the circumstances surrounding a maternal death. These are *1) delay in deciding to seek care, 2) delay in reaching a healthcare facility 3) delay in receiving care at the healthcare facility.*

Most (70%) of the facility based maternal deaths resulted as consequences of home trial followed by prolonged labour landing up in facilities (1st Delay). However, the 2nd delay and 3rd delay accounted for many deaths. The following are the detailed explanations of the three delays observed from the death reviews based on the 2020 MPMSR findings.

Delay 1:

- Poor health seeking behavior and awareness of the patients and the family members regarding the obstetric complication. As home delivery is most favorable, there is typical health-seeking behavior of avoiding seeking care from a facility.
- Low perception of threats of maternal health complications. The community only visits or seeks healthcare at the facilities when the case cannot be managed by TBA. This phenomenon leads to a large number of cases ending up in BEmONC facilities with complications such as prolonged labor, retained placenta, postpartum hemorrhages.

Delay 2:

- Limited availability of emergency transportation or ambulance services and poor road conditions in the camps contribute to delay in reaching the health facilities for emergency obstetric care.
- Denial of services at facilities coupled with inappropriate use of referral pathways like BEmONC to BEmONC referrals leads to delay in receiving appropriate obstetric emergency services.
- Absence of patient escorts or escorts with limited case knowledge contributed to delay in receiving care with challenges in patients' documentations and handover to CEmONC sites
- Administrative delays during CEmONC referrals out of camp have been observed in more than half of the case

Delay 3:

- Lack of adequate skill and knowledge of health staff to manage obstetric emergencies were highlighted especially initial stabilization in the BEmONC sites
- Lack of appropriate quality ANC services in the healthcare facilities to identify high risk pregnancies

- Inadequate functional CmONC facilities. Very limited 24/7 facilities around the camps. Ukhiya and Teknaf Upazila Health Complexes (UHC) are not yet having functional 24/7 services for CEmONC.
- Shortage of blood in the healthcare facilities was observed as there is no blood bank within the camps nor in the vicinity. Blood and lab facilities were not available 24/7 in most of the CEmONC facilities
- Inadequate HR to manage excess case load (2-3 critical cases at once and only 1 specialist available) in the CEmONC facilities.

A shuttle service during emergencies, able to transport pregnant mothers in the nearby health facility in the refugee camps for antenatal, pregnancy and postnatal visits ©UNFPA Bangladesh/ Fahima Tajrin

Chapter 6: Recommendation and Proposed Solutions

1. **Strengthening of the Health system for provision of EmONC care:**

   Advocacy for responsive and functional 24/7 EmONC services at all the referral sites including Upazilla health complexes and Cox's Bazar Sadar Hospital. Health administrators to ensure the provision of the 24/7 EmONC services with availability of adequate blood, medicine and laboratory services in the facility.

2. **Availability of blood:**

   In order to avert maternal death of hemorrhagic cause, uninterrupted supply of blood needs to be ensured through a dedicated blood bank and network. A real time app can be commissioned to track the need and delivery of blood to facilities.

3. **Referral pathway:**

   Address the referral challenges in the upazila level and Sadar Hospital. Avoiding BEmONC to BEmONC referrals and stress on appropriate and timely referrals during the critical times. Referral tracking app to be commissioned to improve the referral linked challenges at the referral sites. Emergency transportation and referral services need to be streamlined and supported to meet the need of transportation services. The facilities and the ambulance referral system is reliant on mobile phone communications. This is risky and vulnerable to poor connection or network blockage / overload, etc. A more appropriate system would be VHF radio based, whereby a central dispatch office in the center would coordinate movement via VHF radios, installed in each of the vehicles and key facilities.

4. **Provision of quality Antenatal Care services:**

   The quality of ANC care needs to be improved by the facilities to ensure appropriate risk stratification of the high risk pregnancies for better management during emergencies. Detailed follow-up and checkup should be carried out and counselling regarding the importance of institutional deliveries should be stated to the mothers.

5. **Human resources development:**

The capacity building activities need to be stressed in the form of continuous medical training, intensive training and mentoring of the health workforce in the facilities. In addition, creative ways to use existing traditional birth attendants (TBAs) in non-labor support or community engagement is recommended to reduce the TBA practice within the camps. Separate training for the CHWs on SRH awareness should be promoted among the partners.

Midwives mentoring cascades knowledge on maternal care practices in both Rohingya and host communities in Cox's Bazar ©UNFPA Bangladesh/Fahima Tajrin

6. **Improve the health seeking behavior of the community:**

This particular recommendation yields long term dividends but is not a low hanging fruit. Thereby community awareness and through community engagement through the CHW network, community leaders and gatekeepers need to be aggressively promoted. These measures should be regularly evaluated to determine if they are having appropriate effect or the messages or communication and community engagement strategy needs to be changed. In addition, the adolescent mother or couple support programs should be promoted to bring the transition towards the institutional deliveries and improving overall health seeking behavior of the community.

7. **Strengthening the mortality surveillance:**

In presence of a robust surveillance system in the camps the partners need to be motivated to notify facility deaths and the community to notify community deaths. Maternal mortality review needs to be discussed in the health committee meetings or Quality Assurance meetings of the facilities.

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- UNFPA, Bangladesh for providing technical support to the MPMSR committee in the MPMSR annual report publication

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