



Republic of Botswana

**The Eleven Promising Practices for Reducing  
Maternal Deaths: Experiences from Ngami Health  
District, Botswana**

JULY 2019

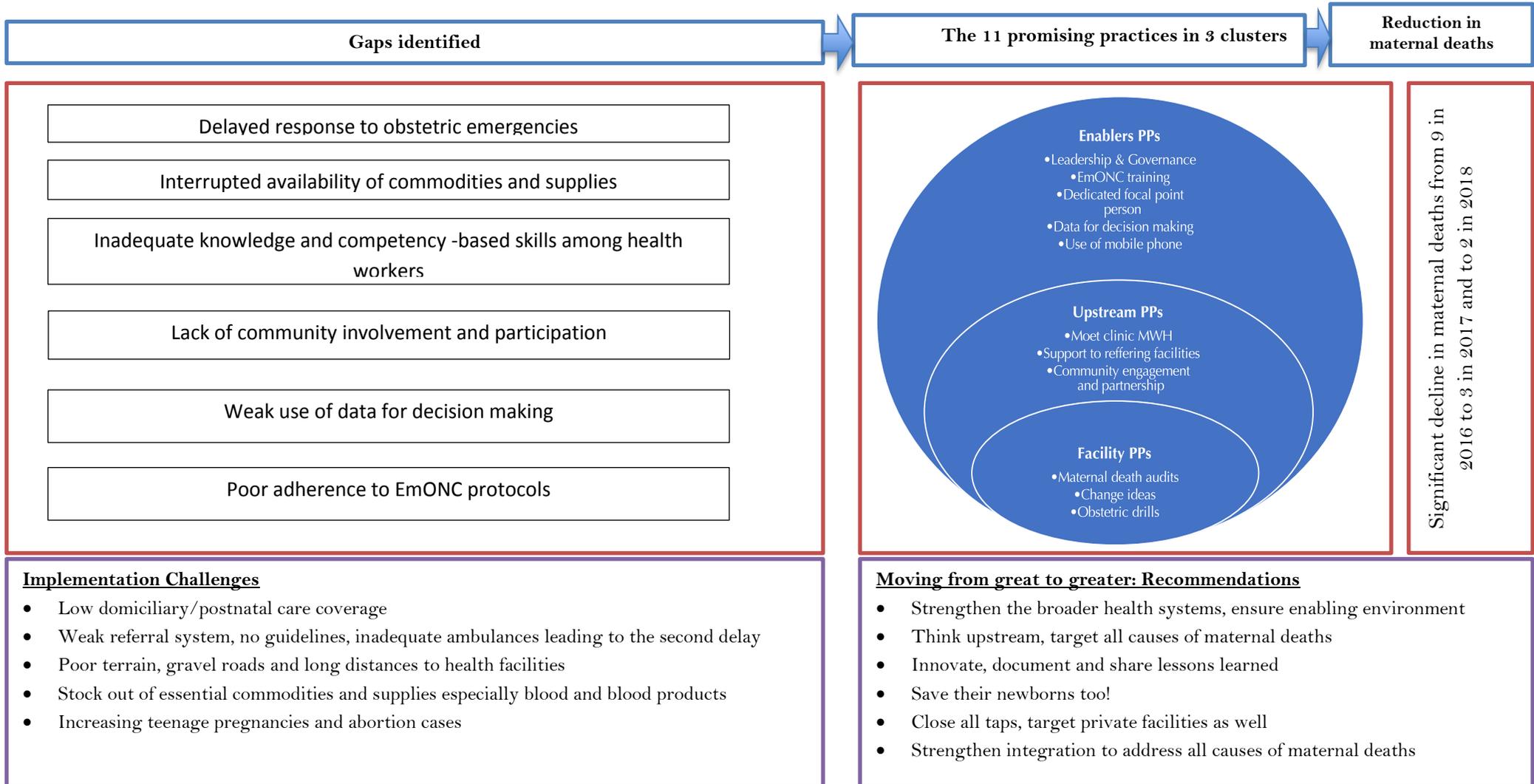
## Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
AMSTL	Active Management of Third Stage of Labour
ANC	Antenatal Care
BBA	Born Before Arrival
CBOs	Community Based Organisations
CMEs	Continuous Medical Education
C/S	Cesarean Section
DC	District Commissioner
DHMT	District Health Management Team
e-MMRI	electronic Maternal Mortality Reduction Initiative
EmONC	Emergency Obstetric and Newborn Care
FP	Family Planning
ICU	Intensive Care Unit
LIIMH	Letsholathebe II Memorial Hospital
MDGs	Millennium Development Goals
MMR	Maternal Mortality Ratio
MoHW	Ministry of Health and Wellness
MWH	Maternal Waiting Home
PE/E	Pre-eclampsia/Eclampsia
PMTCT	Prevention of Mother to Child Transmission
PPH	Postpartum Haemorrhage
QI	Quality Improvement
QIT	Quality Improvement Team
RMNCAH	Reproductive, Maternal, Newborn, Child and Adolescent Health
SDGs	Sustainable Development Goals
SOPs	Standard Operating Procedures
TBAs	Traditional Birth Attendants
TFR	Total Fertility Rate
UNFPA	United Nations Population Fund
WRA	Women of Reproductive Age

## Table of Contents

ABBREVIATIONS.....	1
THE NGAMI HEALTH DISTRICT EXPERIENCES AT A GLANCE.....	3
1.0. PUTTING THINGS IN CONTEXT; BOTSWANA AND NGAMI HEALTH DISTRICT LANDSCAPE ANALYSIS .....	4
2.0. WHY THE DOCUMENTATION AND HOW WAS IT DONE; RATIONALE AND THE PROCESS .....	5
3.0. THE IDEA WHOSE TIME HAD COME: THE NGAMI HEALTH DISTRICT MATERNAL MORTALITY REDUCTION INITIATIVE.....	6
4.0. FROM 9 TO 2 MATERNAL DEATHS PER YEAR; CELEBRATING THE GAINS OF NGAMI HEALTH DISTRICT MMRI .....	8
5.0. THE 11 PROMISING PRACTICES .....	10
5.1. CLUSTER 1: ENABLER PROMISING PRACTICES .....	11
<i>Promising practice 1: Leadership and governance for reduction of maternal deaths .....</i>	<i>11</i>
<i>Promising practice 2: Competency based EmONC training .....</i>	<i>12</i>
<i>Promising practice 3: Dedicated and passionate focal point person.....</i>	<i>13</i>
<i>Promising practice 4: Use of data to inform decision making.....</i>	<i>14</i>
<i>Promising practice 5: Use of mobile phone technology to reduce maternal deaths.....</i>	<i>15</i>
5.2. CLUSTER 2: UPSTREAM PROMISING PRACTICES.....	15
<i>Promising practice 6: The half way home; Moeti maternity waiting homes.....</i>	<i>15</i>
<i>Promising practice 7: Community engagement and partnership.....</i>	<i>17</i>
<i>Promising practice 8: Targeting referring facilities .....</i>	<i>18</i>
5.3. CLUSTER 3: FACILITY BASED PROMISING PRACTICES.....	19
<i>Promising practice 9: Maternal death audits.....</i>	<i>19</i>
<i>Promising practice 10: Change ideas for change .....</i>	<i>20</i>
<i>Change idea 11: Promoting team work amongst midwives in monitoring of women in 4<sup>th</sup> stage of labour .....</i>	<i>20</i>
<i>Change idea 2: Pre-filling the syringe with oxytocin prior to delivery and keeping the syringe on an ice pack to maintain the cold chain .....</i>	<i>21</i>
<i>Change idea 3: Non-admitting midwife on duty checking whether severe eclampsia patient was managed with Mgso4 by the admitting midwife as per protocol.....</i>	<i>22</i>
<i>Change idea 4: Sending abortion patients directly to theatre before admission .....</i>	<i>23</i>
<i>Promising practice 11: Emergency obstetric drills.....</i>	<i>23</i>
6.0. THE LESSONS LEARNT .....	28
7.0. THE SUCCESSES DID NOT COME WITHOUT CHALLENGES.....	29
8.0. MOVING FROM GREAT TO GREATER; THE RECOMMENDATIONS .....	30

## The Ngami Health District Experiences at Glance



## 1.0. Putting things in context; Botswana and Ngami Health District landscape analysis

Botswana has committed herself to achieving the Sustainable Development Goals (SDG) targets, that of ensuring universal access to sexual and reproductive health and rights and reducing maternal mortality ratio to less than 70 maternal deaths per 100,000 live births by 2030. Botswana is one of the countries that had failed to meet MDG 5 whose intention was to reduce MMR by two thirds, by 2015. Moreover, the country is one of the 9 upper middle income countries that recorded the highest maternal mortality ratio at 143.2 per 100000 live births in 2017<sup>1</sup>. Almost all women in Botswana go through ANC (95%<sup>2</sup>) and deliver in health facilities (99.7%<sup>3</sup>). More than half (64%) of women receive postnatal care after birth<sup>4</sup>. Despite these impressive ANC, institutional delivery and postnatal care coverage as well as existence of maternal health standards and guidelines, women continue to die due to pregnancy related causes.

Year	2013	2014	2015	2016	2017
<b>Institutional births</b>	49771	47273	57290	54159	52242
<b>Non-institutional births</b>	68	205	140	168	116
<b>Total live births</b>	49839	47478	57480	54267	52358
<b>Maternal deaths</b>	91	72	73	85	75
<b>MMR (per 100,000 live births)</b>	182.6	151.6	127	156	143.2

The leading causes of maternal deaths in the country are: Abortion (24%), obstetric haemorrhage (20%) and hypertensive diseases (20%)<sup>5</sup>. In addition, the country has high number of deaths occurring as a result of bleeding post Caesarean Section (C/S). This could be an indication of skill deficiency among attending service providers or poor adherence to existing standards and guidelines. Unlike in many other countries in Sub-Saharan Africa where women die at home or on their way to health facilities, women in Botswana die at the health facilities. This situation further points to the need to address quality improvement factors as well as the third delay. Ngami Health

Direct obstetric deaths are those that are due to complications of pregnancy, from interventions, omissions, incorrect treatment or a chain of events resulting from any of these. Indirect obstetric deaths are those resulting from previous existing disease that developed during pregnancy and which was not due to direct obstetric causes, but which was worsened by the physiologic effects of pregnancy.

District was in 2016 one of the seven (7) high burden districts contributing the highest maternal deaths in the country. The district had a notable

increase in maternal deaths between 2014 and 2016.

According to reported and audited maternal deaths, a total of 24 mothers died during this period with 2016 reporting the highest number of 9 maternal deaths. This made the district the third highest after Princess Marina and Gaborone Referral Hospitals.

<sup>1</sup>MMRI Annual Report 2017

<sup>2</sup>Botswana Integrated Sexual, Reproductive, Maternal, Newborn, Child and Adolescent Health & Nutrition

<sup>3</sup>Botswana Vital Statistics Report 2017

<sup>4</sup>Botswana Integrated Sexual, Reproductive, Maternal, Newborn, Child and Adolescent Health & Nutrition

<sup>5</sup>MMRI Annual Report 2018

Following two (2) national summits that brought together the districts contributing highest maternal deaths to share knowledge and experiences on the causes and contributing factors of maternal mortality, Ngami Health District like other districts developed a response plan aimed at instituting and implementing remedial measures for the identified causes of maternal deaths. The faithful implementation of the response plan resulted in a significant decline with the district reporting three (3) maternal deaths in 2017 and two (2) in 2018. The major causes of maternal deaths in the district for the reporting period were abortion, HIV related infections and Embolism.

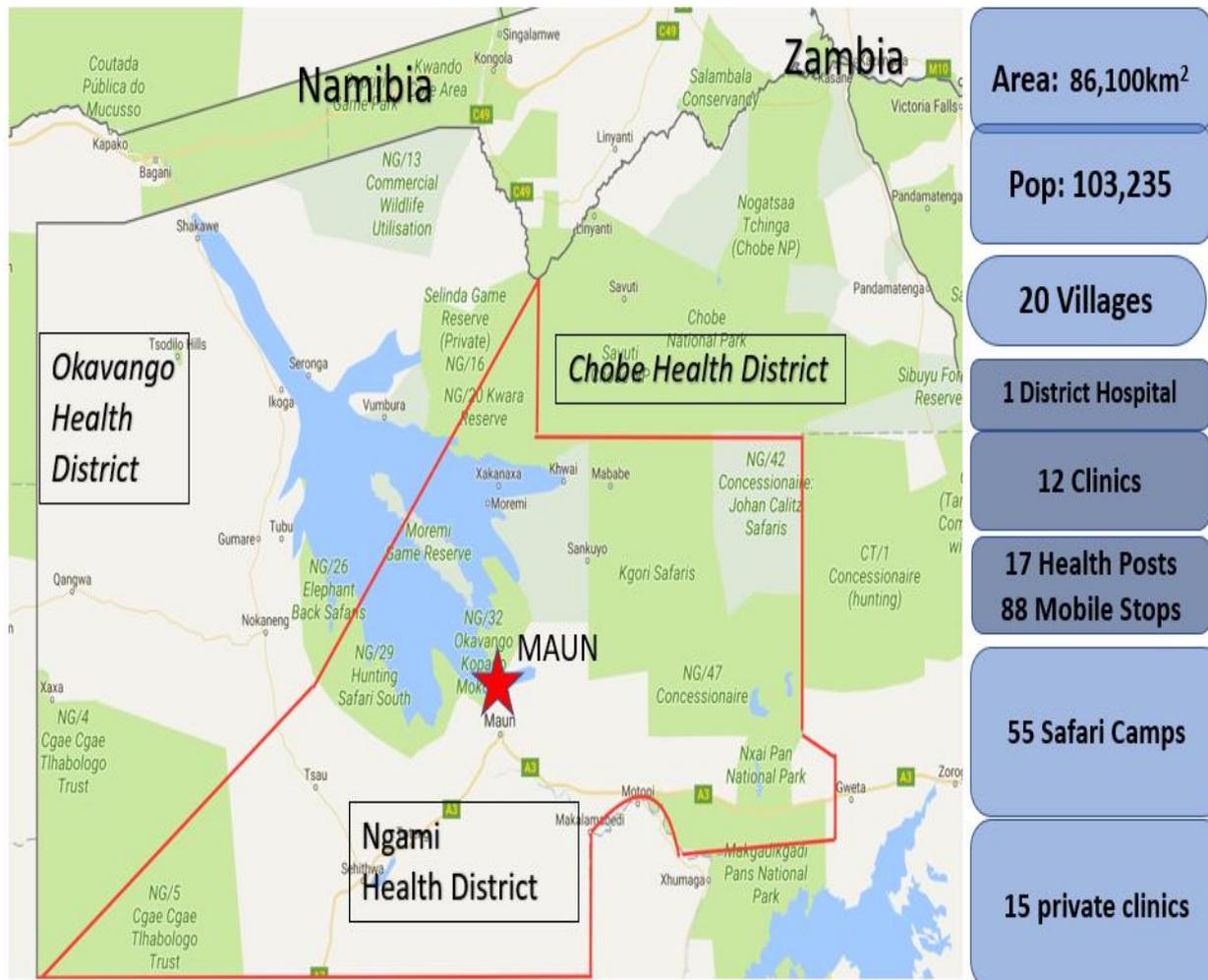


Figure 1: The Ngami Health District Profile<sup>6</sup>

## 2.0. Why the documentation and how was it done; rationale and the process

Ngami Health district has shown good success in reducing maternal mortality from a high of nine (9) maternal deaths in 2016 to two (2) in 2018. This documentation presents promising practices that were used by Ngami Health District in significantly reducing their maternal deaths, lessons learned and implementation pitfalls. Sharing these promising practices on what works is expected to help other districts enhance their program delivery, resulting in overall reduction in country's maternal mortality ratio. Additionally, experiences from this documentation can be replicated by countries in similar settings towards reduction of facility based maternal deaths. The

<sup>6</sup>Unpublished MMRI Presentation Report 2018

recommendations presented in the documentation are also useful in helping Ngami Health District to move from “*great to greater*”, by enhancing implementation of the promising practices and sustaining the gains towards zero preventable maternal deaths.

The documentation was undertaken in May and June 2019 in Ngami Health District, Botswana. The following methods were used to identify the promising practices.

- Review of country and Ngami Health District strategic documents and project reports to understand the context and the root causes for maternal deaths
- Consultations with maternal health experts at national level and in the district to further understand and validate root causes and responses by the district towards reduction of maternal deaths
- Visits to health facilities providing maternity services and interviews with frontline service providers to understand gaps, responses implemented, what worked and what did not work and their general experiences in saving lives of mothers. In addition to facilities in Ngami Health District, referring health facilities from neighboring districts were visited to understand their challenges and how they partner with Ngami Health District referral hospital to reduce maternal deaths
- Community discussions with those who live it – Community leaders were visited and discussions held with them to understand their role, engagement and involvement in reduction of maternal deaths in Ngami Health District
- Validation meetings were held with national and Ngami district maternal health players to confirm identified promising practices, lessons learned, challenges and recommendations for scale up.

### **3.0. The idea whose time had come: The Ngami Health District maternal mortality reduction initiative**

The Ngami Health District maternal mortality reduction initiative was started by the District Health Management Team (DHMT) in 2016. The overall goal of the initiative is to reduce maternal mortality and morbidity through improved quality of care for obstetric complications in the targeted hospitals and clinics. Targeted facilities include: Thito health post, Shashe, Boseja, Moeti, Shorobe, Tsau and Makalamabedi clinics and Letsholathebe II Memorial Hospital. The initiative focuses on implementation of evidence-based, high-impact interventions targeted at the top three causes of maternal deaths, namely: Postpartum haemorrhage (PPH), severe pre-eclampsia/eclampsia (PE/E), and post-abortion complications.

The initiative was born from the district participation in national maternal mortality summits. After the summits, the district conducted clinical meetings and institutional mortality audits with a view to evaluating quality of maternal services offered, identifying deficiencies and learning from the gaps. From the reviews, the DHMT identified that their systems had become a death trap for women. From these audits and out of the “embarrassment” of always being referred to as one of the leading contributors of maternal deaths in the country, the district felt that they had to do something, and do it urgently.

---

*“The time came when as a district we realised that our systems had become a killer and that it had victims who escaped death narrowly- the near misses’*

*“This was our turning point, we realised we had to do things differently...we needed to do things differently to get different results. We used to feel very embarrassed in meetings when Ngami would be mentioned as the district with the highest maternal mortality in the country”, reports the district maternal mortality reduction coordinator*

---

Based on the identified gaps from the reviews, the district developed a response plan which outlined the key actions to be implemented towards reduction of maternal deaths. The Ngami Health District Maternal Mortality Reduction Initiative (MMRI) coordinator reports that the development and faithful adherence to the response plan was a key ingredient of success in reducing maternal deaths. The design and the implementation of the initiative followed clear and systematic steps that included:

- a. Identification, training and posting of the maternal mortality coordinator to Ngami district. Way ahead of the start of the initiative, a coordinator was identified and trained on quality improvement in the reduction of maternal deaths as well as data collection, analysis, reporting and use for decision making.
- b. Development of the response plan – The plan provided details on the gaps identified, the actions to be implemented to address the gaps, the timelines and the person responsible for the implementation of the actions.
- c. Formation, training of the quality improvement teams and ensuring its functionality – Through coaching of the district referral hospital staff, primary hospitals and targeted maternity clinics, the trained Ngami Health District initiative coordinator supported establishment and training of quality improvement teams (QITs). Through regular supportive supervision and mentorship, the coordinator supported the QIT to develop and implement quality improvement projects. A key ingredient of success in the establishment of QIT and implementation of QI projects was the involvement of the DHMT and use of data to inform the projects that needed to be implemented.
- d. Regular supportive supervision, mentorship to health facilities and implementation of community initiatives – The Health District MMRI coordinator (and sometimes the whole DHMT) conducted twice monthly visits to health facilities participating in the initiative to provide supportive supervision and mentorship for implementation of the QI projects for reduction of maternal deaths. During these visits, the coordinator collected data on performance of the facilities. Additionally, through use of existing community structures, the initiative implemented community engagement interventions focused at addressing community related challenges to reduction of maternal deaths.
- e. Learning from the process and sustaining district performance – Using analysed data, the coordinator provided feedback to the health facilities and the DHMT to ensure their motivation and continued implementation of the quality improvement interventions. The data was further used to improve programming, including reviewing the response plan and development of new quality improvement projects.

Summarised below are 10 tips for districts and countries planning to design and implement similar initiatives.

**10 tips for initiating and implementing QI project for reduction of maternal mortality**

1. Have a drive for change; what is your motivation?
2. Identify, appoint and build capacity of a maternal mortality reduction champion
3. Actively involve the management at both district and facility level
4. Identify root causes for the high maternal death
5. Identify the leading causes of maternal death
6. Design and implement strategies that focus on the leading causes of maternal deaths and the root causes
7. Develop, implement and adhere to a maternal mortality response plan
8. Use data to inform decision making
9. Develop implementation tools including monitoring and implementation tools
10. Sustain the gains through continuous feedback and positive reinforcement for service providers

**4.0. From 9 to 2 maternal deaths per year; celebrating the gains of Ngami Health District MMRI**

The BIG celebration from the Ngami Health District MMRI is the drastic decline in the number of maternal deaths from 9 in 2016 (the start of the project) to 2 maternal deaths in 2018. Figure 2 below shows the trends in maternal deaths in Ngami Health District from 2014 to 2018<sup>7</sup>.

---

<sup>7</sup> MMRI Annual Report 2018

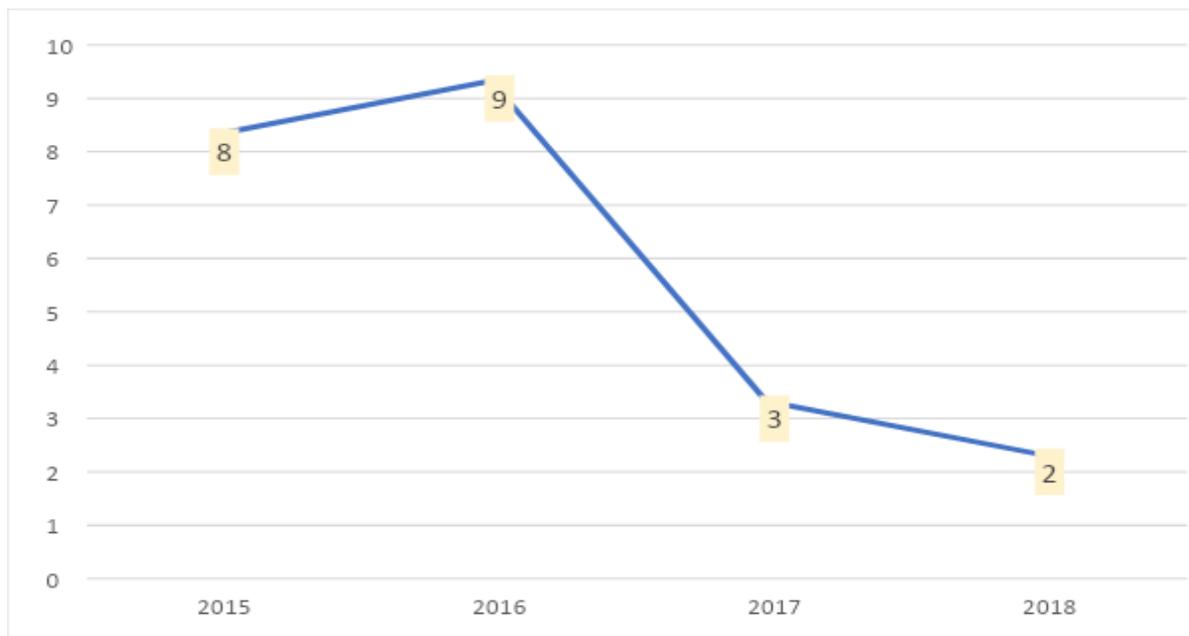


Figure 2: Maternal death trends in Ngami Health District

It is worth noting that all the three (3) maternal deaths in 2017 were not due to direct causes of maternal deaths demonstrating that in that year the district had achieved zero preventable maternal deaths. The causes of death for the year 2017 are as in figure 3. On the other hand all the two (2) maternal deaths in 2018 were due to preventable causes of embolism (1) and PPH (1)<sup>8</sup>.

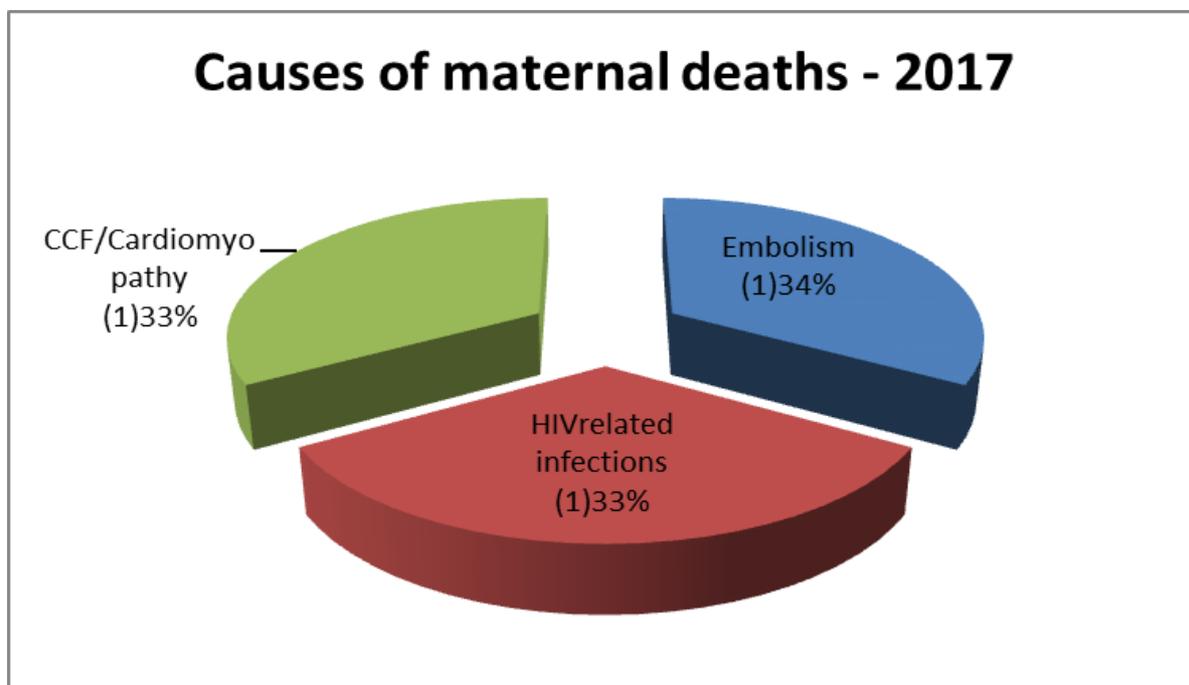


Figure 3: Causes of maternal deaths in 2017

<sup>8</sup> MMRI Annual Report 2018

Expressed as maternal mortality ratio, the district experienced a significant reduction in maternal mortality ratio from 321 per 100,000 live births in 2016 to 68 per 100,000 live births in 2018 as shown in figure 4 below<sup>9</sup>.

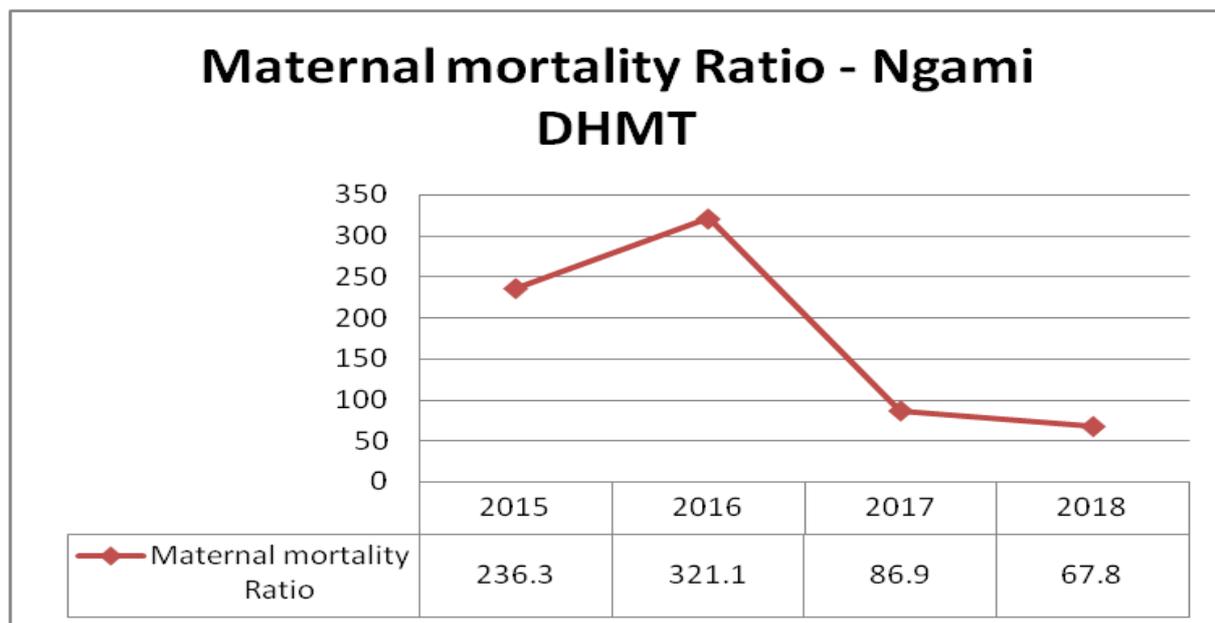


Figure 4: Trends in maternal mortality ratio in Ngami Health District

### 5.0. The 11 promising practices

Eleven promising practices (PPs) have been identified from the Ngami Health District experiences in reducing maternal deaths. The promising practices are grouped into three (3) clusters as shown in figure 5 below. Enabler PPs represent the health system or other promising practices that were implemented and contributed to reduction in maternal deaths. Upstream PPs represent those not implemented at the intervention facility but “upstream” at either a lower level referring facility or at community level. Facility based PPs are those that had a larger focus on the facility where maternal death was likely to happen. An intervention is classified as a promising practice if there is evidence that the intervention was associated with reduction in maternal deaths either directly or through addressing bottlenecks that hinder access to and utilisation of high impact and quality interventions for prevention and reduction of maternal deaths. Under each promising practice, considerations for implementation of the practice are presented. The considerations highlight issues which replicating districts and countries need to consider ensuring success and sustainability of the promising practice.

<sup>9</sup> MMRI Annual Report 2018

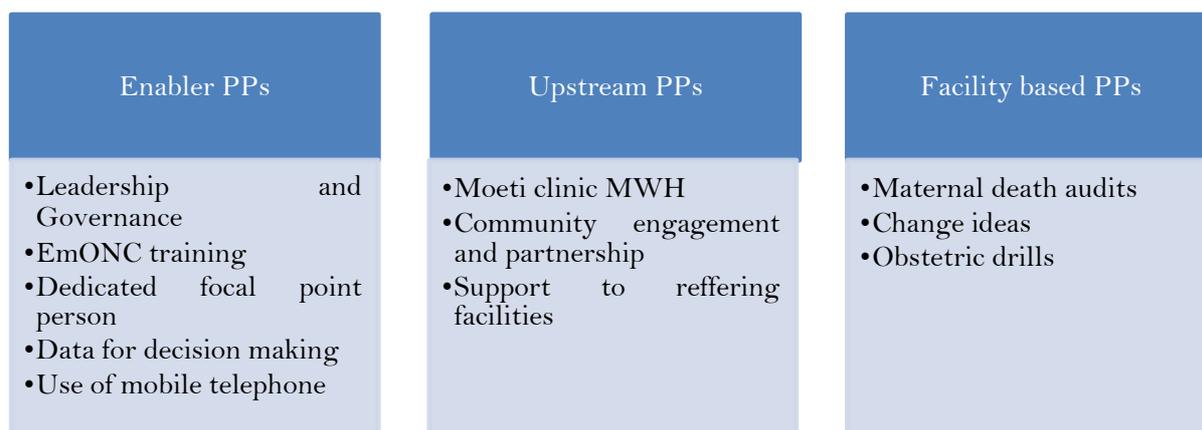


Figure 5: The 11 promising practices for reducing maternal deaths

### 5.1. Cluster 1: Enabler promising practices

#### Promising practice 1: Leadership and governance for reduction of maternal deaths

Leadership and governance is a critical “enabler” for supporting the other health systems blocks towards reduction of maternal deaths. The story of Ngami Health District is a success story of an engaged and responsive leadership. The Ngami DHMT has provided exemplary leadership in visioning and organising the other health systems blocks towards reduction of maternal deaths. The DHMT head chairs the maternal death audit committees, an action that promotes accountability and ensures follow up of actions emanating from the audits. The ownership and active involvement of the Ngami DHMT leadership in the maternal mortality reduction initiative has led to increased prioritisation of maternal health by the district. As evidence in prioritisation of maternal health, maternal mortality reduction is now one of the DHMT performance indicators.

Prevention of maternal deaths requires involvement of other sectors beyond health. An effective leadership should ensure multisectoral partnership in efforts to reduce maternal deaths. Ngami DHTMT has effectively worked with other sectors beyond health to save lives of women. The following extract from Ngami DHMT head demonstrates a leadership that goes beyond what is ordinary and engages other sectors to reduce maternal deaths.

---

*“It was in the quiet hours of the morning when I received a call from an unfamiliar male voice. “A woman has delivered” he echoed. what do you mean by a woman has delivered, where are you calling from and what do you see, responded Ngami DHMT Head. I can see a lot of blood and there is no way we can take her to any nearest health facility because there is water all over and the delta is flooded. Fear was creeping closer by now and I quickly dialed the District Commissioner's number for urgent help. “We are sorry we cannot help, the roads are bad and the delta is flooded”, the DC office responded. The thought of what might be happening with the delivered mother brought more panic and an immediate plan was to contact Botswana Defence Force Maun. “We can only help following authorisation from Head Quarters in Gaborone”, the army responded. I was sweating by now and hope was slowly draining away but managed to call Headquarters. Finally, a Chopper was released to fly 119 km to Khrwai to collect the delivered bleeding mother. Upon arrival to Letsholathebe II Memorial Hospital, on assessment of the woman, she had sustained a 3rd degree tear and was still bleeding. This was repaired and both mother and baby were stabilised. The Botswana Defence Force had a saved a life.*”

---

## Key considerations in ensuring leadership in reduction of maternal deaths

- Use the leadership to engage other sectors beyond health; reduction of maternal deaths requires a multisectoral response.
- Involve the leadership in the maternal deaths reduction initiatives, including in maternal audit committees to ensure they understand and prioritise maternal health issues
- Use of performance targets for reduction of maternal deaths with leaders at different levels is a promising approach to realise change.

## Promising practice 2: Competency based EmONC training

A well-structured competency-based training programme can improve quality of care and reduce maternal deaths. Ngami Health District used to have doctors who could not perform C-sections, this is no longer the case, thanks to the competency based training implemented in the health district. The first phase of the training was funded by the central government but this came to an end in 2017. Despite this, the EmONC training in the district did not stop, Ngami district was able to allocate funds for EmONC training. To increase efficiency, ensure reach of as many service providers as possible, the district reduced training from two residential weeks to one week. This was then followed with mentorship support by the EmONC facilitators to ensure acquisition of competency based skills by the trainees. In addition to targeting the critical cadres like midwives, the Ngami Health district training also targeted other cadres including doctors, nurses, laboratory staff and pharmacists. Support staff including drivers were also sensitised on EmONC to ensure they feel part of the team and understand their role.

The Ngami team noted reaching other cadres and support staff with training and sensitization on EmONC as being a critical ingredient for promoting team work and involvement of all cadres in managing obstetric emergencies. The team identified this as the unique part of Ngami EmONC training:

---

*“With everyone being sensitised on EmONC, everyone gets to know what support is needed and what role they can play in the event of an obstetric emergency. Preventing maternal deaths is the responsibility of everyone, even a guard can help in times of emergency, everyone needs an orientation. When I blow a whistle and shout “PPH, PPH, PPH!!!!!!” I want everyone to come to me and help with what I need ...even a cleaner can call a specialist as I resuscitate a woman, making a phone call does not need one to be a clinician, and that call can be the one that saves a woman experiencing an obstetric emergency”*

---

The EmONC trainings are tailored to address the leading causes of maternal deaths. With the increase in the number of abortion related maternal deaths in the district and realising that abortion cases were ending up in the gynaecology wards, the EmONC training which includes a module on comprehensive abortion care targeted general nurses who receive those clients. Testimonies from service providers who had gone through training reported improved skills in provision of quality obstetric emergency care services.

---

*“The EmONC training was an eye opener, we never used to take some conditions as a priority, for example gestational hypertension, we are used to it, now we classify”*  
*“Before the training we used to mismanage clients with PPH, we did not know what to do, we are now able to classify and manage them properly”*  
*“Now we do not have to wait for the doctor to stabilize a woman, we know what to do before a referral or as we wait for the doctor to arrive”*

---

### Considerations for implementing competency based EmONC training

- Where necessary the EmONC training should be contextualised to ensure it responds to the leading causes of maternal deaths
- To promote team work in the management of obstetric emergencies, in addition to training the critical cadres, EmONC trainings and sensitisation should target other service providers including support staff
- To ensure efficiency and in the context of inadequate financial resources, districts and replicating countries can consider blended and abridged learning with a strong mentorship support and follow up to ensure acquisition of competency-based skills

### Promising practice 3: Dedicated and passionate focal person

A designated and passionate focal person is critical for coordinating maternal deaths reduction initiative especially at the start before this is well institutionalised. Eva Lephirimile-the Ngami Heath district MMRI coordinator was posted in Ngami in 2016, the year of change!. It is from this year when the transition with the district reporting a close to 80% reduction in maternal deaths in 2018 (from 9 in 2016 to 2 in 2018). Eva, fondly referred to by her colleagues as “my sister” is passionate about her work- and this passion is an important ingredient for success.

Eva Lephirimile is a nurse midwife with 32 years of experience. She is self-motivated, passionate and result oriented. Eva has participated in different roles towards maternal mortality reduction in the country and in Ngami District. When asked what motivates her, she says:

*“when I look at the data and see the little changes we are making I feel very motivated...when we significantly reduced maternal deaths from 9 in 2016 to only 2 deaths in 2018, I was very happy”.*

Eva is a member of the national maternal mortality audit committee and a national master trainer in EmONC. She attributes her success to the support she receives from the management.

*The DHMT management read my reports and I meet them to discuss the challenges I am facing they have given me a lot of support. This has helped to achieve my objectives*



*“I am passionate about my work, it is more than just being professional, it is in the heart. Personal drive and motivation is key. When you talk about preventing maternal deaths, that is my name”, says Eva.*

With a clear job description, Eva’s role includes visiting health facilities to provide mentorship and coaching on quality improvement for reduction of maternal deaths, to participating facilities.

This mentorship and coaching is done twice a month and includes providing feedback to service providers based on data collected from the health facilities

### **Considerations in the use of a dedicated focal person**

- The criteria should go beyond technical qualifications and experience; ensure the focal person has the drive and the passion!
- Have in place a clear job description outlining the roles and responsibilities of the focal person
- Support from the management is key to success, ensure the focal person has adequate support from the management

### **Promising practice 4: Use of data to inform decision making**

Timely availability and use of quality data in decision making is critical for improving programming to reduce maternal deaths. Ngami Health District has developed a culture of use of data for decision making and developing initiatives for prevention of maternal deaths. The MMRI coordinator notes that the data is empowering as she clicks her computer and generates graphs on various maternal mortality reduction indicators. She says this data helps her in engaging with the management, measuring progress of the initiative and providing feedback to health service providers. She further reports that the data is important in motivating service providers and keeping their eyes focused on the goal.

---

*“I print out the graphs and take to service providers as part of the feedback, when they see the data on their progress, they get very motivated, this is what keeps them going”, says Eva the MMRI Coordinator*

*“Feedback is critical. No one is going to do the work if they don't have a mirror to hold up to see how they are doing compared to other people. “Providing that feedback allows us to improve and keeps the team focused on the goal”, reports the former Ngami DHMT Head.*

---

Ngami Health District utilises nationally designed four paper-based data collection tools and one electronic data collection tool to support the collection and reporting of the various maternal reduction indicators. The developed data tools include: MMRI-1 ANC Individual Patient Data Collection Tool; MMRI-2 ANC Monthly Data Aggregation Tool; MMRI-3 Maternal/Post Abortion Individual Patient Data Collection Tool; MMRI-4 Maternal/Post Abortion Monthly Data Aggregation Tool; and the e-MMRI District Reporting Tool. The e-MMRI reporting tool captures and consolidates data at the district level and provides automatic calculation of indicators and time series charts for the district and participating facilities. This automatic generation of the graphs makes the tool very user friendly and easy to use even with minimal skills in excel. At the program start, the coordinator was trained in basic excel skills and provided with a laptop loaded with e-MMRI tools specific to their areas of coverage. Monthly patient data from the 11 participating facilities are collected using patient paper-based tools which is then aggregated monthly by the coordinator in the electronic tool for each facility and district. The generated automatic graphs are then used for decision making with the DHMT and facility managers and also to provide feedback and motivation to the service providers. To ensure quality, the coordinator compares facility data in the completed tools with the data available in the obstetric register.

## Considerations for implementing data use for decision making interventions

- Build capacity of the MMRI team on data use for decision making
- Provide necessary tools including a computer to facilitate data collection, reporting and analysis
- Implement systems to ensure data quality including data quality assessments and audits

### Promising practice 5: Use of mobile phone technology to reduce maternal deaths

The mobile phone technology has been used with a lot of success in improving access to health care. Ngami Health District has not been left behind in the use of mobile technology to save mothers lives. In addition to the routine use of voice calls for referral and providing support in management of women with obstetric complications, the DHMT established a WhatsApp group to address stock out of essential supplies and commodities during obstetric emergencies.

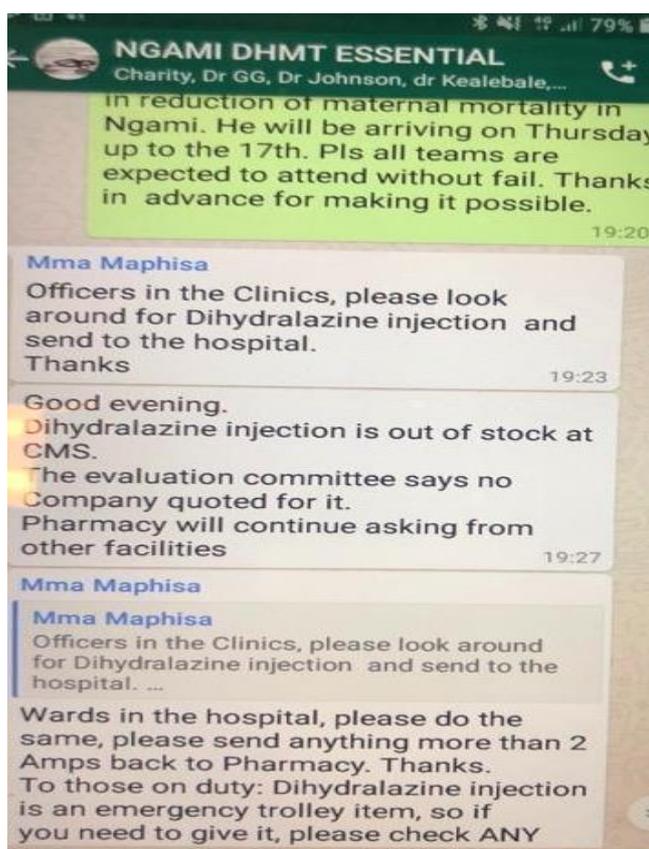


Figure 6: Ngami Health District WhatsApp group

---

*“Sorry my phone is always ringing”, says Eva, the MMRI coordinator and EmONC trainer, “I have to talk to the midwives to discuss management of women in obstetric emergencies, I do this many times over my mobile phone”*

---

The district has used the WhatsApp group with success to mobilise health facilities to bring essential commodities to the district referral hospital during obstetric emergencies.

## Considerations for implementing mobile phone-based technologies

- Ensure availability of mobile phone and internet coverage
- Issues to be addressed through the mobile application need to be clear

### 5.2. Cluster 2: Upstream promising practices

#### Promising practice 6: The half way home; Moeti maternity waiting homes

Timely access to maternal health services especially for high risk mothers is important for ensuring safer pregnancy outcomes. Maternal waiting homes have been implemented with mixed success in

many countries in Africa. Some studies have documented that maternity waiting home users were 80% less likely to die from pregnancy related causes than non-users<sup>10</sup>.

---

*“We discovered there was a high rate of Born Before Arrivals (BBA) in Kareng, which is 154 KM from Maun, these cases had poor maternal health outcomes”, says Eva the maternal reduction initiative coordinator.*

---

In response to the high number of born before arrivals (BBAs), long distance to health facilities, poor terrains and road network and possibility of wildlife attack, Ngami DHMT identified an unused space in Moeti clinic to host women from hard to reach areas like Kareng. The DHMT then defined clear criteria for women to be hosted at the Moeti Maternity Waiting Home (MWH). The criteria for admission are: High risk mothers, that is those awaiting elective section, with previous C-section, multiple pregnancy and those with hypertensive disorders. In addition, a mother could be admitted just on criterion of coming from a hard to reach area. The MWH waiting home also referred to as “halfway home” was established in December 2016 and is strategically situated around 15 minutes-drive to the district referral hospital just in case of an emergency. The clinic is also supported with a standby transport and response system to ensure that women are referred to the district hospital on scheduled dates or at onset of labour. On whether the halfway home had any positive impact, the midwife in charge of Moeti clinic had this to say:

---

*“It has worked, we have hosted around 67 mothers and we have not had any maternal death, we have reduced home deliveries in Kareng-where most of our mothers come from. Home deliveries reduced from 30, to 3 to 2. We have also had increased admissions from Kareng, 42 % of the admissions for 2018 in the district referral hospital were from Kareng, this shows women are coming”*

---

Since 2017 when the Moeti MWH was established, the facility has hosted 67 high risk mothers from ten hard to reach facilities within the district. Kareng clinic which is 154 KM from Maun and whose catchment area covers hard to reach areas with poor roads had the highest number of mothers (24) ever hosted at the Moeti MWH. Although the clinic experienced cases of women wanting to go back home (before delivery) to attend to other chores, the MWH was associated with high rate of acceptability. The DHMT integrated messaging on existence of the MWH and its role in preventing maternal deaths with Kgotla dialogue meetings. To ensure the ‘waiting women’ do not feel bored but feel at home, the clinic bought a TV. Sustainability of maternal waiting home is a big concern to many countries considering use of maternal waiting homes to ensure timely access to maternity services. To address this, the maternity waiting home is provided with a running budget by the DHMT just like the other facilities. A 24-hour facility, Moeti clinic already has facilities and amenities that can be used to support the waiting home.

---

*“There is a high level of acceptability, many mothers want to come and wait in our clinic, we even receive requests from mothers five kilometres from the facility who want to come and wait from here, but we tell them the waiting home is for those that are from far and hard to reach areas”*

---

---

<sup>10</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6167854/>

## Considerations for implementing maternity waiting homes

- Define criteria for women to be admitted into maternity waiting home and ensure adherence to the criteria
- Link maternity waiting home to the referral facility including availability of ready transport just in-case of emergencies
- For purposes of sustainability provide a maintenance budget for the maternity waiting home
- Conduct community sensitisation on availability of the MWH, criteria for admission and its role in reducing maternal deaths.
- To improve acceptability, introduce social activities to ensure women are active

## Promising practice 7: Community engagement and partnership

Responding to our inquiry on community engagement, a women leader respondent starts the discussion like this:

---

*Women belong to the communities and not health facilities, when they come to deliver in the health facilities they come back to their communities, health facilities should involve and engage communities in initiatives for reducing maternal deaths.*

---

And the MRRI coordinator advices:

---

*“Health service providers like telling the community what to do all the time, we should learn to listen to the community, their opinions are important in working towards reducing maternal deaths”*

---

From their response plan, Ngami Health District identified community maternal health challenges as being late ANC booking, high number of BBAs especially in hard to reach areas, high abortion rates and increasing teenage pregnancies. The district implemented community engagement and involvement actions including community sensitisation with community based organisations and faith based organisations and re-orientation meetings with “traditional birth attendants (TBA)”. On community sensitisation, the district reached a total of 12 participants representing various community based organisations through a workshop dubbed “*the role of the community in reduction of preventable maternal mortality in Ngami*”. The workshop led to a ripple effect where participating CBOs developed action plans for reduction of preventable maternal mortality. As a result, ACHAP a local CBO conducted Kgotla meetings with community members on the importance of early ANC booking. Faith Based Organisations also took on the campaign to promote ANC early and continued attendance as well as



Figure 7: Sensitising religious leaders on maternal health

providing sensitisation for prevention of teenage pregnancies. Recognising the influence of “TBAs” on pregnant women, Ngami district conducted a workshop with 10 “TBAs” on the importance of early and continued ANC attendance as well as institutional delivery. The workshop resulted in improved knowledge and commitment by “TBAs” to adopt practices that would reduce risk of women to maternal deaths. The “TBAs” were transformed from “*birth attendants*” to “*institutional delivery promoters*”. The testimonies from the “*institutional delivery promoters*” confirms the change:

---

*“I do not conduct any deliveries these days, I work with midwives in the clinics by referring all pregnant women to the waiting home at Moeti clinic in Maun. I also assist my clinic in community sensitization on importance of early ANC booking as I am also a volunteer in home-based care program”*

---

---

*“We are no longer conducting home deliveries following continued education from our nurses. What we are sharing today is what we used to do in the past, not what we do now, we are changed!. In those days when placenta was retained in the woman, we used to blow an empty bottle to assist expulsion, yes women often bleed after delivery but we did not know what to do. In case of delayed labour, we used special herbs known as “mxamoshoro”- which was mixed with water and given to the woman to enhance” labour”.*

---

A Visit to Kareng maternity clinic, one of the hard to reach areas identified reduction in the number of Born Before Arrivals (BBAs), this is attributed to the community engagement interventions as well as establishment of the Moeti Clinic MWH.

### **Considerations for implementing community engagement and partnership initiatives**

- Conduct analysis to identify the specific community challenges to maternal mortality reduction.
- Develop action plans and implement targeted interventions to address the identified community challenges to maternal death reduction.
- Engage, partner and empower local community groups including community based organisations and faith based organisations

### **Promising practice 8: Targeting referring facilities**

Due to her positioning, Ngami district receives referrals from facilities in the neighboring districts including Okavango, Chobe and Ghanzi districts. Given the improved service delivery in Ngami district referral hospital, it is possible that clients prefer to deliver in the district referral hospital. To reduce maternal deaths, the district must “worry” about those referring facilities. Cases from those referring facilities represent a sizeable percentage of the total number of maternal deaths in the district. To address this, Ngami DHMT has implemented mentorship, coaching and supportive supervision visits to the catchment referring health facilities both in Ngami health district and in the neighbouring districts. The mentorship and coaching is regularly provided by the MMRI coordinator and sometimes by the district gynecologist.

This capacity strengthening helps the lower level facilities to attend to less risky delivery cases and hence reduce congestion at the district referral hospital. On strengthening capacity of the referring facilities the Ngami DHMT Head notes:

---

*“Our morbidity is inherited from elsewhere. We visit the facilities where the morbidities are coming from and ensure they have skills to manage some of the complications. We capacitate our colleagues. We do not have to receive all the emergency cases, some can be managed at the lower level facilities. We even allow them to come to our referral hospital to gain competency based skills in managing main killers of mothers. Our gynaecologist recently trained many doctors on how to perform a C-section.”*

---

### 5.3. Cluster 3: Facility based promising practices

#### Promising practice 9: Maternal death audits

Auditing maternal deaths and near misses helps learn and develop strategies to address the causes of death or “near misses”. Ngami Health District implemented maternal death and near misses audit committee. The audit committee which is chaired by the DHMT Head or the district hospital gynaecologist meets after every 7 days whether there is a death or not. A key feature of the maternal audit committee is that it is multi-disciplinary – bringing in all the players responsible for provision of maternal health in the district. Additional representatives including from private service providers are included on need to need basis.

A maternal death audit is an in-depth systematic review of maternal deaths to delineate their underlying health social and other contributory factors, and the lessons learned from such an audit are used in making recommendations to prevent similar future deaths.

---

*“We meet to identify the gaps, why did she die, or why did she nearly die. The meeting is consistent, we meet whether death happened or not. We are not just interested in auditing the deaths, why wait for them to die, why not monitor those who nearly died, learn and prevent the deaths next time”. We cannot reduce deaths if we cannot reduce near misses’, reports the district hospital gynaecologist.*

---

The ingredient of success for Ngami maternal death audit is the development of action oriented tasks with accountability attached to it. From each maternal death or near misses audit, the DHMT develops a set of actions to be implemented to address each of the identified gaps. For each action, a member of the audit committee is held responsible to ensure its implementation. Implementation status for each action is presented in the following meeting. On this, the maternal death reduction coordinator observes:

---

*“A unique feature about our maternal death and near misses audit committee meeting is the action oriented recommendations. We attach accountability to each action. We attach responsibility to the management of the task. Without this, everything becomes just story telling”.*

---

Findings from the audits are used to provide mentorship as well as to congratulate and motivate service providers where things have worked well.

---

*“When auditing a case on abortion, we realised that specialists were notified very late when very little could be done to save the woman. Together without blame game we learned the right time to engage our specialists- early enough- you do not wait until things are out of control and then that is the time you call a specialist”, notes the MMRI coordinator.*

---

### **Considerations for implementing maternal death audits**

- Establish a multidisciplinary audit committee with leadership of the DHMT. For effectiveness of the committee, and to ensure ownership; where possible the DHMT Head or appointee should chair the committee.
- Do not just discuss the death, it is a good practice to also audit the ‘near misses’
- Develop action oriented tasks, hold someone responsible for each action and ensure follow up for implementation
- Ensure maternal mortality and near misses audit is not a blame game but a process of learning together

### **Promising practice 10: Change ideas for change**

Informed by maternal death audits, Ngami district referral hospital implemented simple change ideas that were associated with increased adherence to established guidelines and protocols for management of leading killers of women. The change ideas responded to the leading causes of maternal deaths in Ngami district, those of: haemorrhage, eclampsia and abortion. The following four change ideas were implemented with success.

#### **Change idea 1: Promoting team work amongst midwives in monitoring of women in 4<sup>th</sup> stage of labour**

Observations from maternal audits identified that there was poor adherence to guidelines for monitoring women during the fourth stage of labour. This was observed as being common during peak hours when midwives were busy or during handing over time. To address this, a change idea was introduced “where midwives would assist each other when busy and during handing over time”. A midwife would call a colleague to offer a hand and ensure monitoring of a woman in 4<sup>th</sup> stage of labour as per national guidelines.

This simple change idea was associated with improvement in the number of women monitored in the 4<sup>th</sup> stage of labour as per the protocol. Starting from a baseline of 55%, the project was able to raise and maintain this above 80% throughout 2016 and in following years as shown in the figure below for 2016.

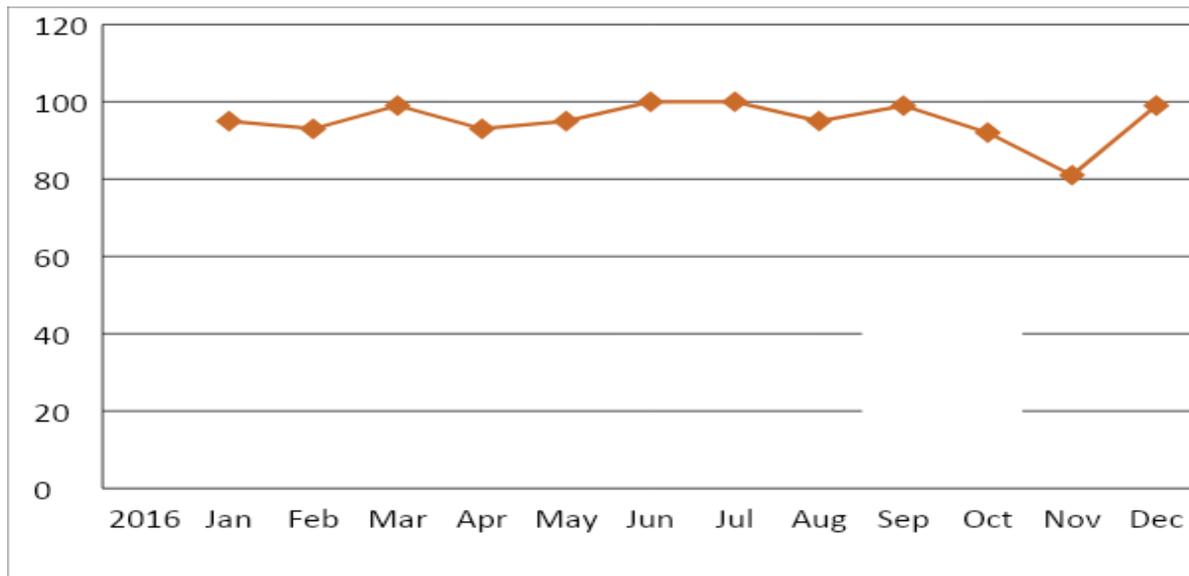


Figure 8: Percentage of women monitored during the 4th stage of labour as per protocol

**Change idea 2: Pre-filling the syringe with oxytocin prior to delivery and keeping the syringe on an ice pack to maintain the cold chain**

The Botswana guidelines on active management of the 3<sup>rd</sup> stage of labour require that women receive oxytocin within one minute after delivery to prevent postpartum haemorrhage. Maternal death and near misses audits in 2016 identified that there was poor adherence to this protocol. The root cause of the poor adherence was inadequate number of midwives. To address this, the district referral hospital implemented a quality improvement project on pre-filling the syringe with oxytocin to ensure timely provision of the drug and keeping this on ice pack to maintain cold chain and hence the potency of the drug. This change idea was associated with maintaining the percentage of women who received oxytocin within a minute after delivery above 80 % in 2016 and years that followed. Although there was no comparison data for the period before the start of the quality improvement interventions in 2016, this is a great performance score.

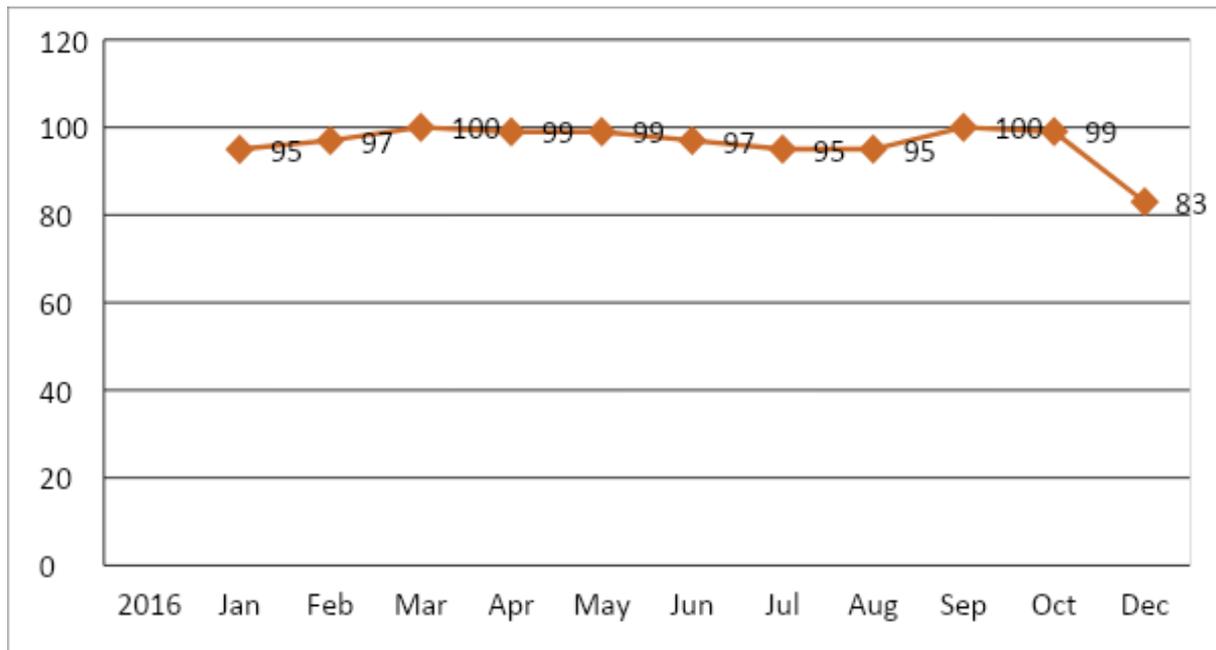


Figure 9: Percentage of women monitored during the 3rd stage of labour as per protocol

**Change idea 3: Non-admitting midwife on duty checking whether severe eclampsia patient was managed with Mgso4 by the admitting midwife as per protocol**

Being your sister and brother's keeper is all what this change idea is about. The Botswana guidelines require that women diagnosed with severe pre-eclampsia during labour are managed with magnesium sulphate at admission. Due to work pressure, inadequate number of midwives and sometimes stock out of magnesium sulphate, maternal death audits identified that there was poor adherence to this protocol. To correct this, the district referral hospital implemented a change idea where a non-admitting midwife on duty checked whether after admission the patient with severe eclampsia was managed with magnesium sulphate by the admitting midwife. The change idea was associated with sustained 100 % compliance to the protocol from 2016 except during the months of June and October where service providers did not record the drug administered.

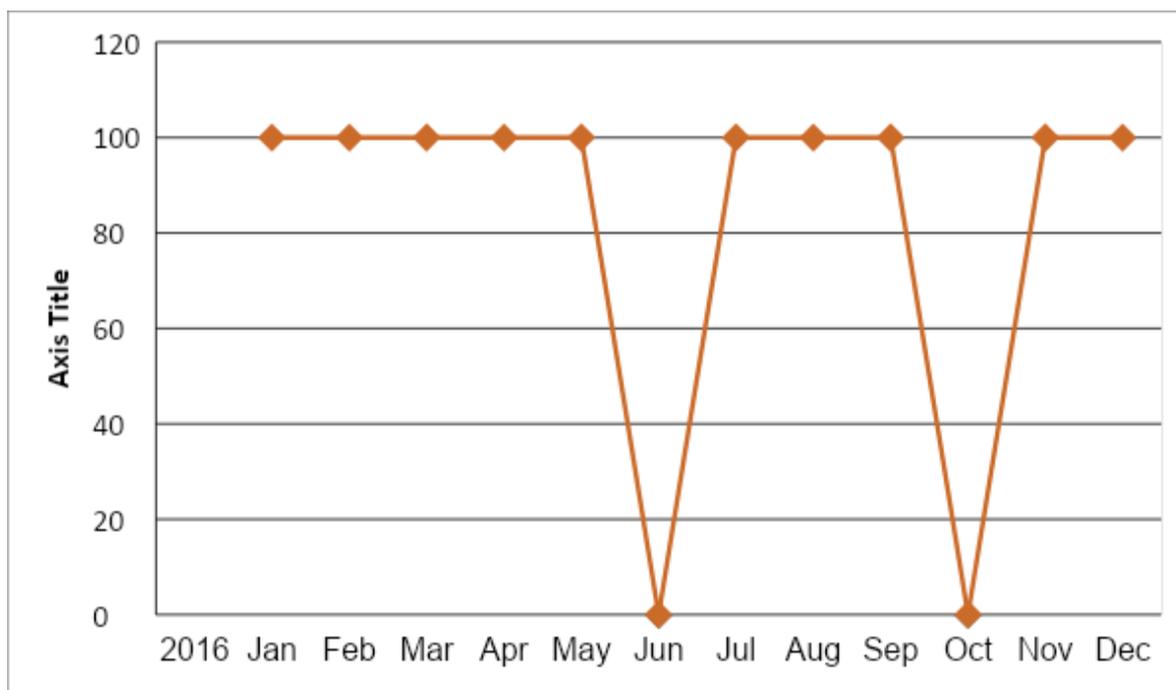


Figure 10: % of women diagnosed with severe PE during labour who are managed with MgSo4 before admission

#### Change idea 4: Sending abortion patients directly to theatre before admission

Protocols for management of abortion related complications require that patients with incomplete abortion are evacuated within 2 hours of diagnosis. Maternal death audits identified delays in evacuation resulting mainly from inadequate health workers and stock out of sterile packs. To address this, the Ngami district quality improvement team implemented a change idea where patients diagnosed with incomplete abortion are sent directly to the theatre before admission. Although no pre-intervention data was available, the change idea was associated with over 60% of the women with incomplete abortion being evacuated within 2 hours of diagnosis.

#### Promising practice 11: Emergency obstetric drills

Like fire drills, obstetric drills are used to check the “alertness” of the system to respond to emergencies. The drill checks emergency response readiness factors such as staff availability, competencies, communication and linkages, team work and availability of essential commodities and supplies. To test the system, the DHMT implemented repeated obstetric drills, developed and implemented corrective actions to address identified gaps.

*Emergency “fire-drill” plays an integral role in training emergency care providers to deal with “at risk” situations. It is a rehearsed series of maneuvers in a planned and simulated environment, thereby allowing risks to be identified and tackled without real exposure of patients to inadequate care. These on-site simulations using Mannequins, actors, or dolls are helpful in identifying deficiencies in the care of patients, and actions can be taken in correction of these problems.*

The drills responded to the leading causes of death in the district, being postpartum haemorrhage and eclampsia as identified from the maternal death audits.

The first drill was conducted in March 2017 on management of postpartum haemorrhage. Although the staff had been trained on EmONC, many had forgotten how to respond to obstetric emergencies. The drills do not end just after the actual performance of the drill, the DHMT develops actions to address the identified gaps. On this, Dr. Pedro the district hospital gynaecologist observes:

---

*“Our drills lead to action, we use the drills to identify gaps in the system, and then we develop solutions to address those gaps... then we conduct another drill to see whether our solutions worked”*

---

To address the skill gap on responding to obstetric emergencies, the district referral hospital implemented continuous medical education (CMEs) to impart competency-based skills on obstetric emergency response to health care providers.. Repeated drills were associated with improved team work, communication and competencies in management of obstetric emergencies. A year later in 2018, a drill in the same facility on management of PPH identified improved service providers' competencies and team work in responding to obstetric emergencies. A gap identified in this drill was stock out of essential commodities and supplies at that time of the obstetric emergency-postpartum haemorrhage. Again the district responded with an innovative solution - that of using “*emergency obstetric packs*” for management of the leading causes of maternal deaths-PPH and eclampsia. The magic packs are clearly marked, strategically located and contain all the required commodities and supplies to respond to obstetric emergencies.



*Figure 11: Postpartum haemorrhage drill at the district referral hospital*



Team work is key in obstetric drills. The conducted drills were associated with improved attitudes towards team work in the management of obstetric emergencies.

---

*“In managing obstetric emergencies, you do not play a hero it is about team work”. “Everyone has a role, during an obstetric emergency even a cleaner should clean nearby, just in case the midwife says...call for me so and so...”*

---

A story of Kgakololo Nkwane , a driver from the Ngami district referral hospital, as told by the district maternal death reduction initiative coordinator further confirms the positive impact of team work in timely management and response to obstetric emergencies.



Figure 13: Driver Kgakololo Nkwane receives an award

---

*“We were trying to resuscitate a woman who needed blood, then we went to Nkwane our driver and told him, “we need blood”!. He told us, blood is in Gumare Hospital more than 400 kilometres away and not in a good road!. In my mind there was no way we could get blood in good time, not less than 4 hours, and that woman will be gone. The driver picked his phone and called his fellow driver from Gumare and asked him to get blood and drive towards the Ngami district referral hospital. They met half way and in a record time of one hour, the blood was there. Although we lost the woman, the commitment was evident. We congratulated the driver and gave him an award- he was our champion. Anyone can save a woman, reducing maternal deaths is a business of everyone’*

---

### **Key considerations for implementing emergency obstetric drills**

- Conduct needs assessment or use findings from maternal death audits to ensure drills respond to leading killers and the root causes for maternal deaths.
- Develop and implement actions to address identified gaps to obstetric emergencies.
- Ensure repeated and regular obstetric drills and check on impact of solutions

implemented to address identified gaps.

- Team spirit is key in responding to obstetric emergencies, implement strategies to promote team work.

## 6.0. The lessons learnt

From the implemented promising practices, the following key lessons are summarised. The lessons are useful to districts and countries planning replication and scale up of Ngami Health District experiences.

- Strong leadership and governance at all levels is essential for achievement of results. The DHMT Head's involvement and support is a critical ingredient of success in reduction of maternal deaths.
- A dedicated and passionate focal person is important for follow up, provision of mentorship and supportive supervision to health facilities and for linking with DHMT, Ministry of Health & Wellness and other stakeholders.
- Data use is critical for evidence-based decision making, improving response and for motivating service providers.
- Team work is key to reduction of maternal deaths. It promotes effective obstetric emergency response.
- Focusing on the leading causes of maternal deaths and associated root causes is an effective approach for reduction of maternal deaths.
- For maternal death audits to be effective, there must be clear tasks that need to be undertaken, with timelines and someone to be held accountable for the implementation of the tasks. An inbuilt follow up of action plans is critical. An action oriented and time-bound response plan and adherence to its implementation is a key ingredient for success.

## **7.0. The successes did not come without challenges**

Despite the great strides, implementation of the Ngami Health District MMRI experienced some challenges. Addressing these challenges going forward would mean better results in achieving zero preventable maternal deaths, which is the DHMT's ultimate goal. The following were the implementation challenges experienced.

- a. Low domiciliary/postnatal care coverage-The root causes for the low coverage of postnatal care/domiciliary coverage were lack of reliable transport and inadequate health workers to conduct home visits to mothers after mothers have been discharged from health facilities.
- b. Weak referral system resulting from lack of referral guidelines, inadequate ambulances and health workers to accompany and provide care to referred women.
- c. Poor terrain, gravel roads and long distances to health facilities with some being over 150 KM from district referral hospital- This negatively impacted on timely provision of emergency obstetric care services hence increasing risk of poor maternal health outcomes.
- d. Stock out of essential commodities and supplies especially blood and blood products – Stock-out of blood and blood products was associated with lack of necessary laboratory supplies and weak blood donation campaigns.
- e. Increasing teenage pregnancies and abortion cases contributing to increase in maternal deaths – The high teenage pregnancies and abortions could be as a result of poor access to contraceptives especially by adolescent girls.

## 8.0. Moving from great to greater; the recommendations

Ngami Health District will need to sustain the gains, and move from great to greater to achieve zero preventable maternal deaths. The following recommendations are useful, first to Ngami Health District and secondly to other districts and countries planning to replicate and scale up promising practices from Ngami.

**Recommendation 1:** Ensure an enabling environment through strengthening the health systems – Reduction of maternal deaths is a factor of all health systems building blocks. To sustain the gains and for effective scale up, identify and address all health systems bottlenecks to achieving zero preventable maternal deaths. More importantly, ensure adequate and skilled health workforce and all time availability of essential commodities and supplies including blood and blood products.

### Specific action

- Conduct frequent health systems bottleneck analysis to reducing maternal deaths, develop and implement action plans to address them.

**Recommendation 2:** Think upstream, target the possible sources of maternal deaths – Most maternal deaths in Ngami district happen at the referral hospital, the risks however start at lower levels including at household, community and lower level facilities that refer to the district hospital as the pregnant women move across the continuum. Thinking upstream will mean addressing the risks early enough and preventing maternal deaths.

### Specific actions

- Conduct demand side bottlenecks analysis, develop and implement action plan to address identified demand side barriers.
- Develop social communication behavior change interventions, and partner with Community Based Organisations whilst working with community health workers to improve knowledge and practices for reduction of maternal deaths at household and community level.
- Establish and utilise a multidisciplinary team to provide mentorship and supervision to lower level facilities that refer to the district hospital. Involve all departments including Laboratory and Pharmacy.

**Recommendation 3:** Innovate, document and share lessons, locally, nationally and globally – To ensure district and facility specific working practices are shared across, replicated and scaled up. Ngami district should innovate, document and disseminate working practices first among her health facilities, the region to include neighbouring districts and then at national level.

### Specific actions

- Build capacity of the district on documentation and dissemination of promising practices for prevention of maternal deaths.
- Learning from the national summits, the district should lead in organising regional summits as a precursor to the national maternal summit.
- Document and download tested tools and resources for prevention of maternal deaths in an online source for use by others
- Mobile phone technology worked in ensuring availability of commodities for management of obstetric emergencies, the district should innovate on other tested applications for mobile technology such as tracking pregnant women for early ANC booking and facility delivery.

**Recommendation 4:** Save their newborns too! – Quality improvement interventions implemented by Ngami district were successful in reducing maternal deaths, similar approaches have potential to work towards reduction of newborn deaths, and will benefit both mother and the newborn.

**Specific actions**

- Conduct newborn health landscape and bottleneck analysis identify the situation and the causes of newborn death (Sustainable Development Goal 3.2)
- Develop an action plan, integrate with the district maternal response plan, implement and monitor

**Recommendation 5:** Close all taps; target private facilities as well. Private facilities provide considerable maternal health services. As part of the “whole market approach” and as the district moves to zero preventable maternal deaths, Ngami district and the country at large should target private facilities with quality improvement interventions for reduction of maternal deaths.

**Specific actions**

- Conduct analysis on provision of maternal health services by private sector and identify existing gaps.
- Develop and implement an action plan for partnership with private service providers in prevention of maternal deaths.

**Recommendation 6:** Strengthen integration to address all causes of preventable maternal deaths – HIV and AIDS and abortion related causes of maternal death are common in Ngami Health district. Unmet need for contraception resulting in increasing teenage and unplanned pregnancies are the root causes of unsafe abortions. Strengthening integration of the HIV & AIDS response with SRH services including family planning is a useful and sustainable interventions for reducing maternal deaths.

**Specific actions**

- Develop protocols, SOPs and job aids for integrating HIV and AIDS and FP in other efforts for maternal deaths reduction.
- Sensitise service providers and ensure adherence through supportive supervision and mentorship.