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*Applying Science to Strengthen  
and Improve Systems*

## USAID ASSIST Project

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# Botswana Country Report FY14

**Cooperative Agreement Number:**

AID-OAA-A-12-00101

**Performance Period:**

October 1, 2013 – September 30, 2014

**DECEMBER 2014**

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#### DISCLAIMER

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For more information on the work of the USAID ASSIST Project, please visit [www.usaidassist.org](http://www.usaidassist.org) or write [assist-info@urc-chs.com](mailto:assist-info@urc-chs.com).

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## **Abbreviations**

AIDS	Acquired immunodeficiency syndrome
AMTSL	Active management of the third stage of labor
ANC	Antenatal care
ART	Antiretroviral therapy
ASSIST	USAID Applying Science to Strengthen and Improve Systems Project
EmONC	Emergency obstetric and newborn care
GA	Gestational age
HAART	Highly active antiretroviral therapy
HCI	USAID Health Care Improvement Project
HIV	Human immunodeficiency virus
MDG	Millennium Development Goal
M&E	Monitoring and evaluation
MOH	Ministry of Health
MMRI	Maternal Mortality Reduction Initiative
MNCH	Maternal, newborn, and child health
PE	Pre-eclampsia
PE/E	Pre-eclampsia/eclampsia
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PET	Pre-eclampsia toxemia
PPH	Post-partum hemorrhage
QI	Quality improvement
RH	Reproductive health
SRH	Sexual and reproductive health
URC	University Research Co., LLC
USAID	United States Agency for International Development
USG	United States Government

# 1 Introduction

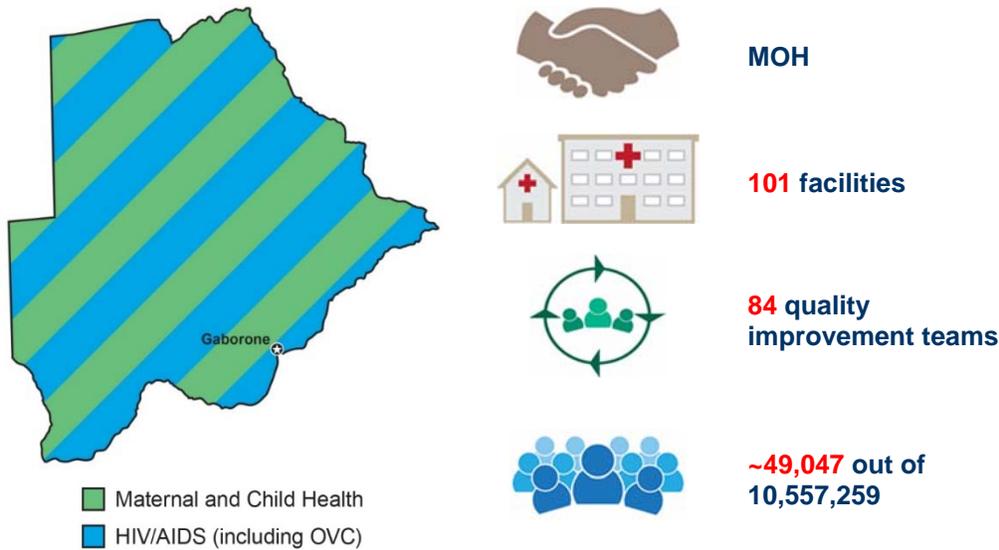
The USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project started working in Botswana in January 2013, building on planning activities conducted in 2012 through the USAID Health Care Improvement Project (HCI). ASSIST is supporting the Ministry of Health (MOH) in pursuing its national level goal of reducing maternal mortality from 160 to 80 per 100,000 live births (Millennium Development Goal 5), setting a clear implementation schedule of quality improvement (QI) activities with explicit delegation of responsibilities, and aligning activities at all levels to meet the national level goal.

Botswana has made serious investments in the health care sector during the last several years. Multiple improvement frameworks under various names have been developed. However, despite these efforts, the country is not seeing an improvement in key health indicators. The maternal mortality rate increased from 163 per 100,000 live births in 2010 to 189 per 100 000 live births in 2011. The top three causes of maternal death were severe pre-eclampsia/eclampsia, post-partum hemorrhage (PPH) and post-abortion complications. The Government of Botswana therefore decided to focus on addressing maternal and neonatal mortality and asked USAID for support. Because of Botswana's high HIV prevalence and because maternal mortality is higher among HIV-positive women, USAID ASSIST's support for the Ministry of Health is supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR).

USAID ASSIST supports the Maternal Mortality Reduction Initiative (MMRI) with a National Coordinator for the initiative in country, a senior QI consultant who provides coaching and capacity building with monthly visits to different districts in the country, as well as high level technical assistance from University Research Co., LLC (URC). The MOH appointed 11 midwife coordinators to coordinate QI activities in the 26 health districts in the country and provides the logistic support for the implementation of the activities.

The focus of QI activities is the implementation of evidence-based, high-impact interventions including: reduction of post-partum hemorrhage (PPH) through active management of the third stage of labor (AMTSL); promotion of monitoring of the fourth stage of labor to identify early onset of complications that require immediate intervention; immediate administration of magnesium sulphate in patients with pre-eclampsia/eclampsia (PE/E); and the immediate uterine evacuation of products resulting from complicated incomplete abortion within two hours of the diagnosis.

## Scale of USAID ASSIST's Work in Botswana



## **Background: Maternal Mortality in Botswana**

The Botswana National Maternal Mortality Audit committee has developed a *Five year Botswana Maternal Mortality Report (2007-2011): Exploring causes of maternal mortality* (manuscript being edited), which ASSIST has contributed to both reviewing and editing. The report shows that the rate of maternal deaths has remained stationary over the last five years. Of the 246 maternal deaths captured in the maternal mortality audit register, 71 (20.5%) occurred in 2007, 60 (17.3%) in 2008, 78 (22.5%) in 2009, 64 (18.5%) in 2010 and 73 (21.1%) in 2011. Data are not yet available for 2012. Thirty-seven percent of the deaths occurred in the city area of Gaborone that comprises the highest density of population in Botswana, followed by Francistown (Botswana's second largest city) with 27% of deaths.

The study showed that most deaths occurred in health facilities. The profile for maternal mortality in Botswana is typically women in the 23-34 year age group, single, with two previous children, and secondary/tertiary level education. This profile reflects the demographic characteristics of the majority of women of reproductive age in Botswana.

Sixty-two percent of deaths happened in the third trimester of gestation, most likely related to complications during labor and the post-partum period. Those that occurred during the first trimester are mainly related to complications of abortions (both intentional and unintentional).

Seventy-four percent of maternal mortality cases were attributable to direct causes related to pregnancy and delivery; of those, 38% were due to hemorrhage, 24% as a result of hypertensive disorders, and 22% from complications stemming from abortions. Twenty-five percent of maternal deaths were linked to indirect causes that occurred concomitant with the pregnancy. HIV and AIDS was directly responsible for 68% of indirect maternal deaths.

### **Challenges to maternal mortality reduction:**

- **HIV and AIDS:** Data from 2009 shows that 29% of pregnant women in Botswana are infected with HIV.<sup>1</sup> Previous reports found that HIV was responsible for 10.2% of maternal deaths in 2008.<sup>2</sup> However, the MOH maternal mortality report<sup>3</sup> found that 73% of the maternal deaths that occurred from 2007-2011 were of HIV-positive mothers. The same study also found that 50% of maternal deaths due to hemorrhage were among HIV-positive women (with the remaining 28% HIV-negative and 22% HIV status unknown). As such, the maternal health challenge in Botswana can also be considered a challenge of HIV and AIDS.
- **Mismanaged abortions:** More than 10% of maternal deaths in 2008 were attributed to abortion.<sup>4</sup> A recent unpublished study<sup>5</sup> found that abortion contributed to 15% of maternal mortality cases. Under Botswanan law, the only circumstances in which abortions are legal are pregnancies resulting from rape, incest, and those that endanger the life of the mother, the infant or both. As such, the vast majority of abortions in Botswana are considered illegal. Verbal reports provided information on systematic delays in removing the products of conception after an incomplete abortion.
- **Quality and accessibility of emergency obstetric and newborn care (EmONC):** National capacity to provide EmONC services needs to improve, with a special focus on the level of clinical skill. The unpublished study of maternal mortality demonstrated that 79% of the maternal deaths that occurred from 2007-2011 were linked to delays in providing treatment and substandard clinical care<sup>6</sup>.
- Other factors that contribute to the challenge of reducing maternal mortality in Botswana include a delay in providing appropriate services, poor quality of the services provided, and a lack of the

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<sup>1</sup> Country HIV and AIDS Facts at Glance. Botswana. Second Generation Sentinel Surveillance 2009. [www.naca.gov.bw](http://www.naca.gov.bw)

<sup>2</sup> Civil Society organizations Vision 2016 and MDG Indicators Report 2009. [http://www.cso.gov.bw/attachments/article/113/Vision\\_2016\\_Millennium\\_Development\\_Goals\\_Indicators.pdf](http://www.cso.gov.bw/attachments/article/113/Vision_2016_Millennium_Development_Goals_Indicators.pdf)

<sup>3</sup> Five year Botswana Maternal Mortality Report (2007-2011): Exploring causes of maternal mortality (not published yet).

<sup>4</sup> Millennium Development Goal Report 2012 in <http://www.un.org/en/development/desa/publications/mdg-report-2012.html>

<sup>5</sup> Five year Botswana Maternal Mortality Report (2007-2011).

<sup>6</sup> Ibid.

necessary supplies for the management of obstetric complications.<sup>7</sup> A breakdown of these factors is presented below:

- **Delay in seeking care** (19%): Delay in deciding to refer to the next level of care within the same institution or next referral facility.
- **Delay in arriving at the facility** (3%): About 95% of the population lives within an eight kilometer radius of a health facility. In some cases, transport was unavailable during an emergency, contributing to a maternal death.
- **Delay in receiving appropriate care** (78%):
  - **Inappropriate management** (51%): Guidelines and protocols were not followed and cases were misdiagnosed.
  - **Delayed intervention** (30%): Delay in instituting appropriate diagnostic studies and management.
  - **Lack of supplies and equipment** (12%): There are regular shortages of essential supplies such as wide bore cannula, IV fluid-giving sets, urine dip sticks, and drugs like magnesium sulphate and oxytocin.
  - **Lack of blood and blood products** (9%): Botswana has a perennial shortage of blood and blood products. Most of the blood supply is obtained from students; shortages are exacerbated during school and public holidays.

## 2 Program Overview

Activities	What are we trying to accomplish?	At what scale?	Improvement Activity	Activity
1. National Maternal Mortality Reduction Initiative (MMRI)	Reduce maternal mortality through implementation of evidence-based, high-impact interventions with focus on: <ul style="list-style-type: none"> <li>• Obstetric best practices</li> <li>• PPH management</li> <li>• PE/E management</li> <li>• Post abortion complications management</li> </ul>	Countrywide (26 health districts) Coverage: 50,048 live births (2012) QI teams: 84 QI teams formed (Sep 2014) out of 101 QI teams expected to be formed Facilities: two referral hospitals, 22 district and primary hospitals, one private hospital, and 77 clinics with maternity services <i>Population: 2,098,018</i> <i>HIV+ pregnant women (2013):13,902 (29%)</i>	X	

## 3 Key Activities, Accomplishments, and Results

### Activity 1. National Maternal Mortality Reduction Initiative

#### ACCOMPLISHMENTS

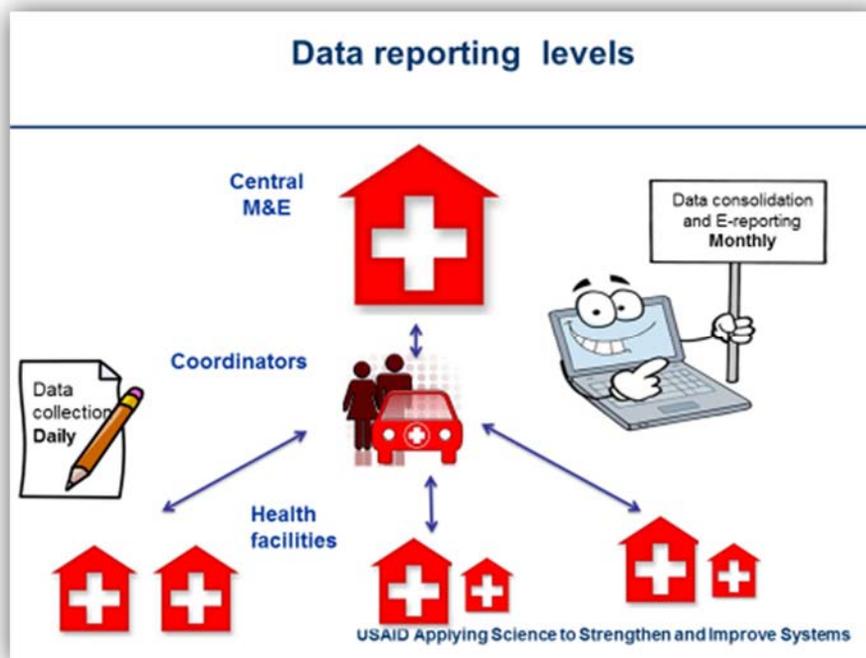
- **Supported the MOH in the development of a monitoring and evaluation framework for the MMRI.** ASSIST supported the Sexual and Reproductive Health (SRH) Department of the MOH to develop a monitoring and evaluation (M&E) framework.
- **Developed data collection tools.** ASSIST designed four paper-based data collection tools and one electronic data collection tool to support the collection and reporting of MMRI data: MMRI Antenatal Care (ANC) Data Collection Tool (Individual Patient); MMRI ANC Monthly Data Aggregation Tool; MMRI Maternal/Post Abortion Data Collection Tool (Individual Patient); MMRI Maternal/Post Abortion Monthly Data Aggregation Tool; and the e-MMRI District reporting tool. The latter, a computer-based tool, captures and consolidates data at the district level with automatic calculation of indicators and time series charts at the facility and district levels. Each coordinator received a laptop loaded with the

<sup>7</sup> Ibid.

e-MMRI tool tailored to their specific area of coverage. Draft tools were reviewed and pilot tested during the training session in January 2014 and later in district and primary hospitals.

Facilities collect data in the paper-based tools that are aggregated monthly by the midwife coordinators in the electronic tool for analysis of data collected at the facility and district level and for reporting to the central level (Figure 1).

**Figure 1. MMRI data reporting levels: Facility level, district level (midwife coordinators), and central level**

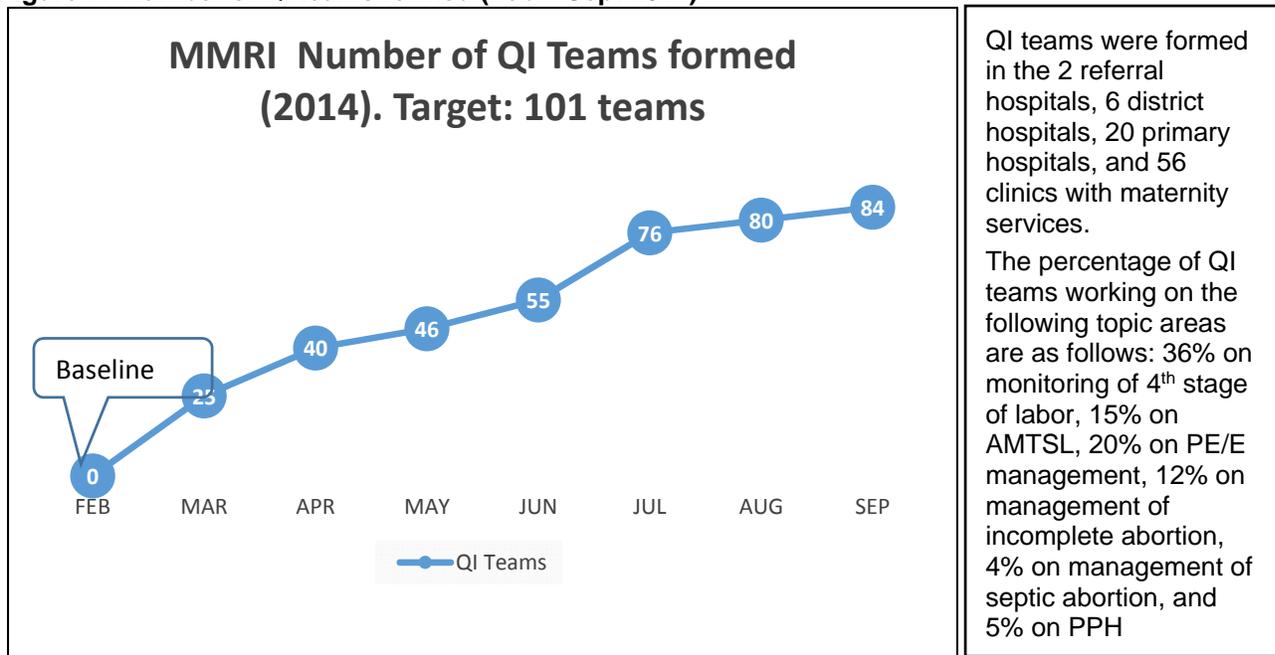


- **Conducted training on data collection and reporting.** In early January 2014, coordinators were trained on the use of the tools for collecting data on the program indicators through computer-based tools. Coordinators were also taken through the process of using the consolidated database to report to the central level of the MOH.
  - The computer-based tool was designed to facilitate analysis and interpretation of data at the facility level, thus reducing the dependence of the MMRI midwife coordinators on the central government to provide timely and accurate analysis for feedback to the facility-based QI teams on performance.
  - Recording and reporting tools were first developed and pilot tested on a small scale in one reference hospital. Feedback was addressed in improved versions of the tools for use in all facilities supported by the project. In addition, ASSIST developed a data collection manual to support the process of data collection in the facilities.
- **Conducted training on quality improvement.** Two training sessions on the methodology and practical application of quality improvement were held in early 2014 for the midwife coordinators appointed by the MOH to support the Maternal Mortality Reduction Initiative. As this was the first exposure to QI methodology for the coordinators, the content of the training was intentionally kept basic and practically oriented. The objective of the session was to provide the coordinators with sufficient knowledge on how to set clear aims, identify change ideas that could lead to improvement, and test these changes while measuring outcomes so that they felt confident in applying QI principles in their assigned facilities.
  - First QI training session - Gaborone, Jan. 13-14, 2014: Midwife coordinators were exposed to process mapping, driver diagrams, and fishbone tools used to help identify root causes of poor performance. Participants were then guided through the process of how to set clear aims, how to

identify ideas that could lead to improvement, and how to test these ideas while measuring outcomes.

- Second QI training session - Gaborone, Feb. 10-12, 2014: Participants presented the improvement work they were currently engaged in. During the training, each coordinator developed a schedule to ensure they visited each health facility in their area of coverage every two weeks.
- **Provided support for the development and functioning of QI teams:** ASSIST provided support and coaching to the midwife coordinators and QI teams in the form of visits by the ASSIST MMRI Coordinator, ASSIST QI consultant, and from staff from the SRH Department of the MOH. Coaching visits focused on how to facilitate QI team meetings, setting objectives, and providing feedback. Direct support at the facility level was provided in Princess Marina and Scottish Livingstone (March 17-20, 2014), Princess Marina (April 2-4, 2014), Francistown and Selibe Phikwe (May 6-8, 2014), Selibe Phikwe (May 2014), Gumare (13-18 July, 2014), and Gaborone, Kweneng East, Kweneng West, Moshupa, Goodhope, Southern, and Lobatse districts (8-12 September, 2014). The ASSIST team also worked with hospital directors to increase support for improvement teams in their facilities.
  - A visitation schedule was prepared in conjunction with each midwife coordinator to ensure that all QI teams in the catchment area receive regular and ongoing support through an in-person visit at least twice a month. In addition to providing support to the QI teams, coordinators used facility visits to gather M&E data collected at the facility and provide oversight on the data collection process.
  - As of mid-September, 2014, 84 QI teams were formed out of a total of 101 expected teams (Figure 2). Private hospitals have showed reluctance to engage in QI activities.

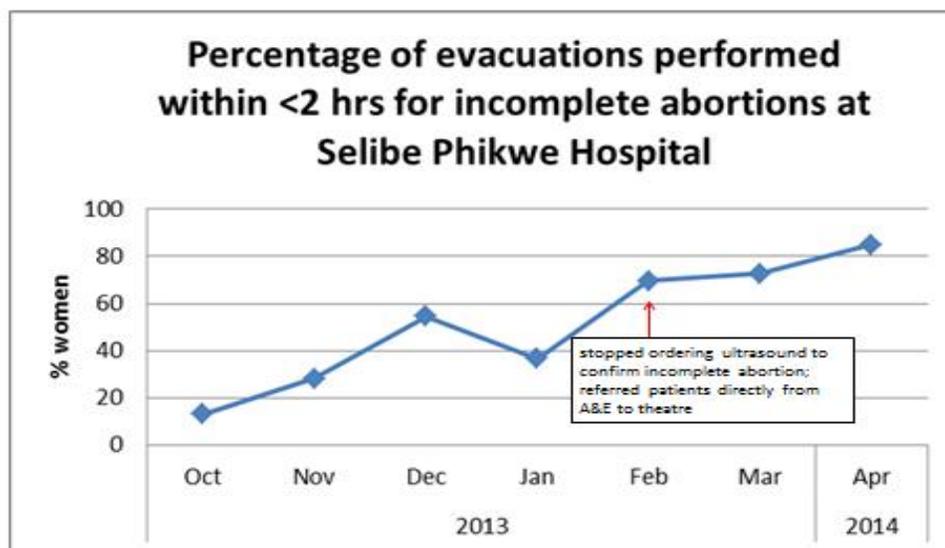
**Figure 2. Number of QI teams formed (Feb – Sept 2014)**



- **Developed job aids for prevention and management of frequent obstetric complications.** ASSIST developed job aids covering prevention, early detection, and management of PPH, pre-eclampsia/eclampsia, and post abortion complications in a poster format which were subsequently shared with the country technical team and approved by the MOH; all three job aids are included in the Appendix. The MOH is currently in the process of publishing and distributing the job aid posters.
- **Built capacity at the central level for management and analysis of MMRI data.** ASSIST has been providing ongoing capacity building to MOH personnel for the consolidation, management, and analysis of data collected under the MMRI M&E system. In addition, the project developed a data consolidation system to aggregate monthly data from the districts into a master database as well as a data analysis manual to support analysis at the central level.

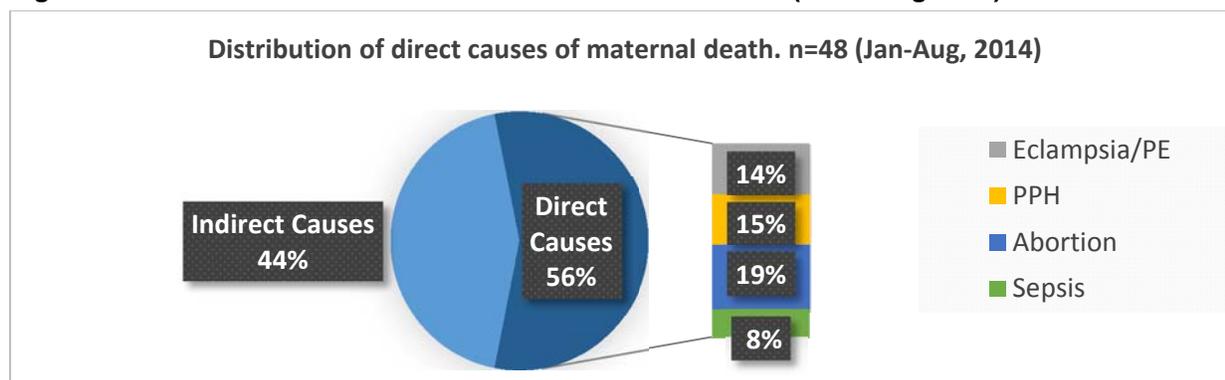
- **Monitored availability of drugs essential to the provision of maternal/neonatal services.** MMRI coordinators reported that some facilities were experiencing stock-outs of essential drugs and that ongoing efforts to improve the quality of the services in an effort to reduce maternal morbidity and mortality were hindered by the non-availability of these drugs. To assess the magnitude of the stock-outs, the project developed a simple tool to assess the presence/absence of key drugs needed to prevent and treat obstetric complications in clinics and hospitals. Data were collected from facilities in 18 health districts during June, July and the first two weeks in August 2014. Drug availability is being reported by midwife coordinators and shared with the Central Medical Stores weekly in an attempt to prompt a rapid response to dwindling drug levels in facilities.
- **Supported SRH division with data analysis.** The Safe Motherhood Initiative designed a maternal and Perinatal Monitoring Tool for monthly reporting of obstetric complications. Data were being captured at the SRH Department but were not being analyzed. In the 2<sup>nd</sup> quarter, ASSIST supported the analysis of the 2012 data to strengthen the MOH health information system. Data from 2013 are not available yet at the MOH.
- **Conducted data collection for baseline assessment of the MMRI** (Feb 2014). Baseline data were collected from 63 of the 101 facilities participating in the MMRI. The sample included the two referral hospitals, 22 district and primary hospitals, one private hospital, and 76 clinics with maternity services from 27 health districts. Data were reported to ASSIST headquarters for analysis.
- **Supported MOH training in emergency management of obstetric and newborn care** (Q1). ASSIST supported three EmONC trainings conducted in the districts. One hundred and twenty midwives and doctors participated in a two-week training designed to improve identification and management of obstetric and neonatal emergencies and to improve providers' clinical skills.
- **Conducted QI learning/sharing workshops.**
  - First QI learning/sharing workshop, Gaborone May 12-15, 2014: Conducted the first learning session for MMRI midwife coordinators and relevant stakeholders in the MOH, USAID, and the U.S. Centers for Disease Control and Prevention. During the first two days, QI coordinators shared the progress of their improvement work since the QI training session in February 2014. Coordinators shared effective change ideas that could be replicated by other QI teams to improve the management of incomplete abortion. Figure 3 shows data and changes introduced in the Selibe Phikwe hospital which were shared by the coordinator during the learning session. Participants received coaching on how to use the Model for Improvement to guide QI teams. During the workshop, coordinators reviewed baseline data, identified common reporting errors, and planned for validation and correction of reported data.

**Figure 3. Botswana: Percentage of evacuations performed within <2 hours for incomplete abortions, Selibe Phikwe Hospital (Oct 2013 – April 2014)**



- Second sharing/learning workshop, Francistown, September 22-26, 2014: Participants received coaching to further refresh their skills in applying the Model for Improvement and facilitating QI meetings. The workshop provided a forum for QI coordinators to share progress on their improvement work and discuss improvement strategies and barriers to implementation. Coordinators shared change ideas they had been using to secure improvements within the facilities they were working in and discussed how to use learned practices from one facility, or from another coordinator's experience, and adapt those for implementation in another facility. Coordinators identified common errors in data collection and discussed strategies, including validation and step-by-step actions, to improve the quality of data reported. Group exercises included an analysis of a case study from the national maternal death audits focusing on the identification of process issues and possible change ideas for improvement.
- **Participated in national maternal mortality audits (Q4)**. Dr. Sinvula, ASSIST National MMRI Coordinator and national lead of the Maternal Mortality Audit Committee, conducted several maternal audits in the districts of Maun and Francistown as part of the ongoing committee activities to audit all maternal deaths that occurred this year. In addition, ASSIST conducted a preliminary analysis of maternal mortality audit reports through mid-August 2014. Forty-eight (48) maternal deaths were reported to the MOH in 2014 through mid-August, 2014. Of those, 35 were audited (73%). The remaining maternal deaths were not audited or were pending completion of an audit report. A preliminary analysis of the audits conducted provided the following insights: More than half of the deaths (56%) were attributable to direct obstetric causes. Of those, 19% were due to post-abortion complications (sepsis, hemorrhage, etc.), 15% to postpartum hemorrhage, 14% to pre-eclampsia/eclampsia, and 8% to sepsis (Figure 4). Of those maternal deaths due to indirect causes (44%), the main factor was HIV-related complications (17%), followed by other medical conditions such as cardiomyopathy, endocrine disorder, respiratory disorder, etc. (13%).

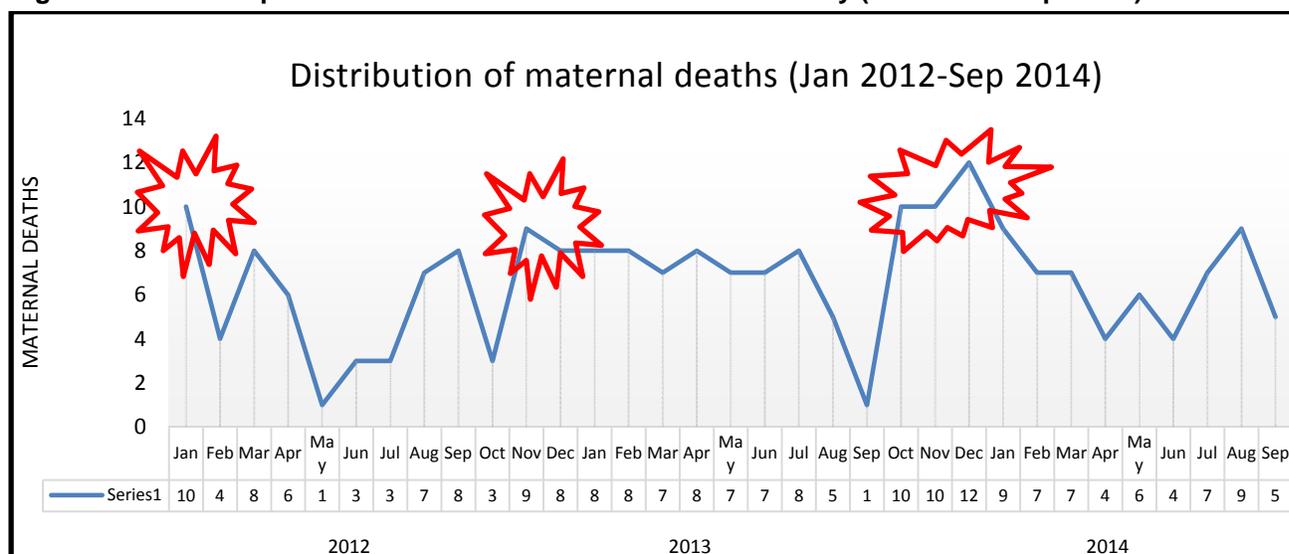
**Figure 4. Botswana: Distribution of causes of maternal death (Jan – Aug 2014)**



- **Maternal deaths due to PPH.** Eight deaths were reported as being due to PPH; nevertheless, the maternal death audit revealed that all eight of the cases were related to hemorrhage that occurred during or after Cesarean section interventions. These findings were reported to the MOH, and further investigation is being conducted to clarify the situations that led to death during the interventions in different facilities. No case of PPH due to atonic uterus has been reported so far this year, which is consistent with the high compliance with AMTSL reported by most facilities.
- Most maternal deaths occurred in referral (42%), district (21%), or primary hospitals (29%). Only one death (2%) was reported in the patient's home, and one in a private hospital (2%).
- Referral mechanisms were documented in 17 of the 35 maternal deaths audited. More than half (55%) of maternal deaths were referrals from other facilities. Two of the referred patients died in transit due to delays in the referral and failure to stabilize the patient before referral. Some maternal deaths were referred between 2-4 facilities, demonstrating a lack of coordination in referrals between facilities. There is no clear protocol for referral of obstetric emergencies.
- HIV status was reported in 23 of the 35 maternal audits conducted. Of those, 18 maternal deaths were HIV-positive and 5 HIV-negative. Seven of the 18 HIV-positive patients were receiving HAART, nine HIV-positive patients were not receiving HAART, and seven HIV-positive patients did not have treatment status documented.

- Data from 2012-2014 showed a seasonal pattern in maternal deaths, with a peak occurring during the months of November-January, most likely related to the national vacation time around Christmas (Figure 5).

**Figure 5. Seasonal pattern of the distribution of maternal mortality (Jan 2012 – Sept 2014)**



- **Tested changes.** Changes tested to improve EmONC included:
  - Materials describing the early recognition and management of complications posted on the facility walls
  - All patients with severe pre-eclampsia toxemia (PET) are seen by a specialist within 1 hour of admission and started on MgSO<sub>4</sub>
  - For all severe pre-eclampsia (PE) patients, a delivery plan is established and executed within 12 hours of diagnosis
  - Make a prompt referral plan when the patient is diagnosed in an antenatal care (ANC) visit
  - All PE cases are discussed in the morning report for team handover
  - Report adherence to 4<sup>th</sup> stage of labor monitoring at the morning meetings
  - Involve support staff in the monitoring of the 4<sup>th</sup> stage
  - Photocopy the 4<sup>th</sup> stage of labor chart contained in the new obstetric records and include a copy in every old obstetric booklet
  - Audit patient files and report on 4<sup>th</sup> stage of labor during every shift
  - All patients with incomplete abortions are sent directly to theatre from A&E instead of first being admitted onto the ward
  - The doctor in accident and emergency ward communicates directly with the doctor performing evacuations
  - Initiate management of incomplete abortion without the need to first have an ultrasound to confirm the diagnosis

## RESULTS

### Improvement in Key Indicators

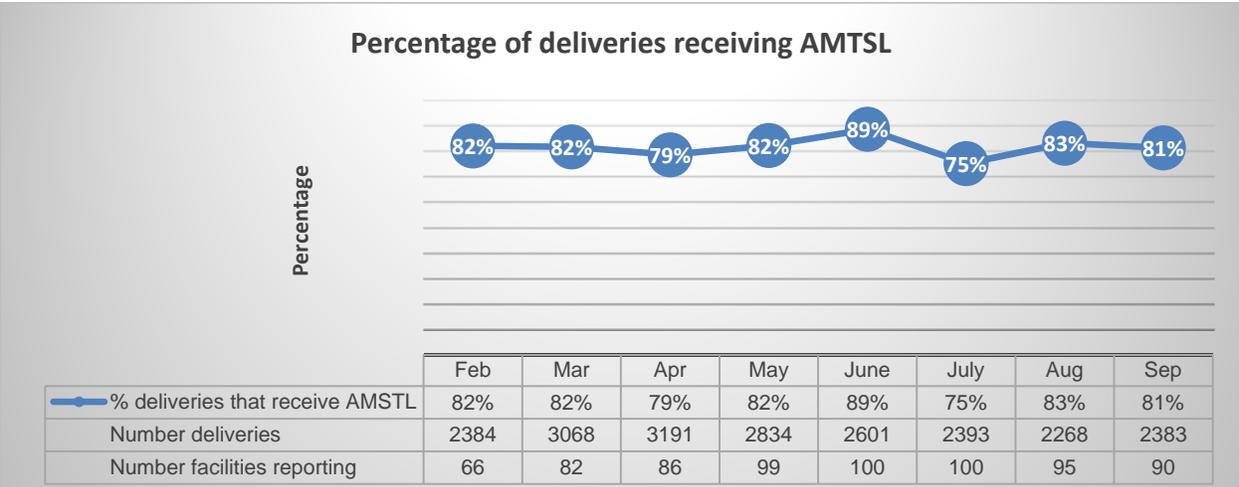
Activity	Key Indicators	Baseline Feb 2014	Last value Sept 2014
National Maternal Mortality Reduction Initiative	% of delivering women administered oxytocin in the first minute after delivery (AMTSL)	82% (67 facilities reporting, 2031 deliveries)	90% (90 facilities reporting)
	% of women monitored during the 4 <sup>th</sup> stage labor per protocol	39% (67 facilities reporting, 2031 deliveries)	81% (90 facilities reporting)

Activity	Key Indicators	Baseline Feb 2014	Last value Sept 2014
	% of women in ANC with severe pre-eclampsia (PE) managed per protocol	6% (68 facilities reporting, 72 PE cases during ANC)	17% (90 facilities reporting)
	% of women in labor with severe PE managed per protocol	22% (69 facilities reporting, 97 PE cases in labor)	37% (90 facilities reporting)
	% of incomplete abortions managed per protocol	45% (20 facilities reporting abortions)	57% (34 facilities reporting abortions)

**Improvement indicators**

**AMTSL:** As shown in Figure 6, the proportion of women who benefitted from active management of third stage of labor receiving a uterotonic within first minute of delivery of baby (oxytocin 10 units intramuscular or misoprostol or ergometrine if oxytocin unavailable) has remained steady at around 80% since February 2014. During the month of July, the QI teams of several facilities worked on improving compliance with AMTSL and thoroughly measured the time to provide the oxytocic within the first minute of delivery. As a result, the indicator was adjusted downward as facilities began reporting compliance according to stricter adherence to the AMTSL protocol.

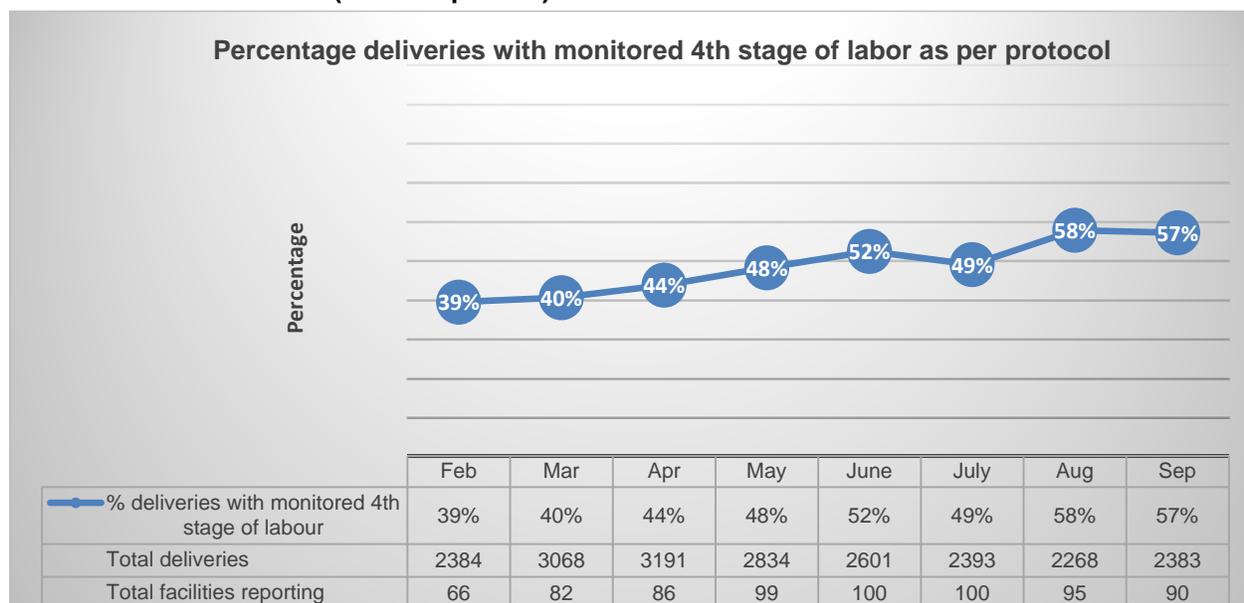
**Figure 6. Percentage of women that received oxytocin within the first minute after delivery (AMTSL) (Feb – Sep 2014)**



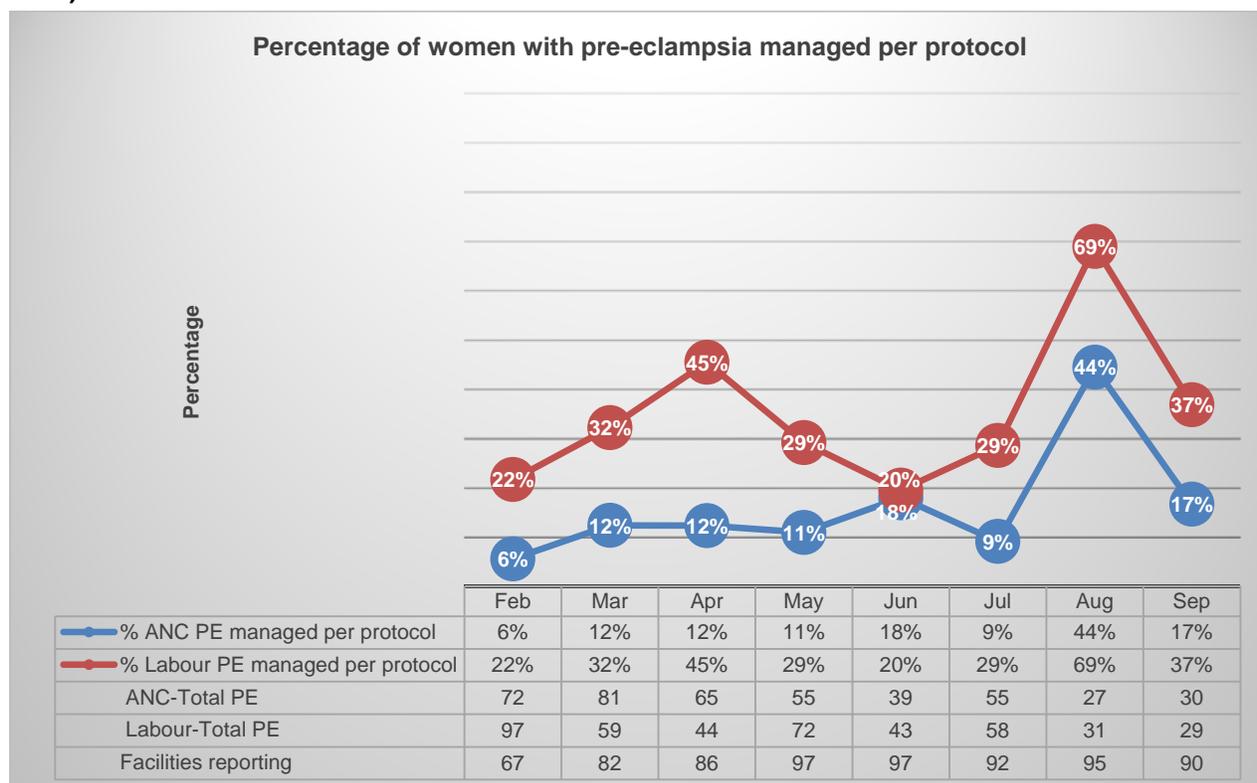
**Monitoring of the 4th stage labor.** The percentage of women monitored post-partum every 15 minutes for the first hour and every 30 minutes in the second hour with documentation of vital signs, vaginal bleeding, uterine consistency, urine output, and height of fundus is shown in Figure 7. This is a complex indicator to comply with, as it is time-consuming and requires health worker availability to perform measurement of vitals and physical assessments six times in the first two hours post-partum.

**Proportion of pregnant women diagnosed with PE/E managed per protocol.** This indicator is measured at two levels: pre-eclampsia diagnosed during ANC visits should be provided with loading dose of MgSO4 and promptly referred to a higher level facility; PE diagnosed during labor should receive MgSO4 and be evaluated for immediate delivery if >34 weeks gestational age (GA) or provided with steroids for 24 h if <34 weeks GA, followed by delivery. Figure 8 shows that compliance with this indicator is low and worse at the ANC level (average 11% compliance during February–September 2014). Improvement activities had been focused at the facility level during the first year. The number of QI teams focusing on improving early detection and management of PE is still reduced (19% of QI teams are focusing on management of PE/E during ANC and 20% during labor) as the teams prioritized in general the implementation of changes in AMTSL, compliance with 4<sup>th</sup> stage monitoring, and management of post-abortion complications. During the FY15, QI teams will move towards testing and implementing successful changes in detection and management of PE/E.

**Figure 7. Percentage of women monitored during the 4th stage every 15 min (1st h), every 30 minutes the second hour (Feb – Sept 2014)**

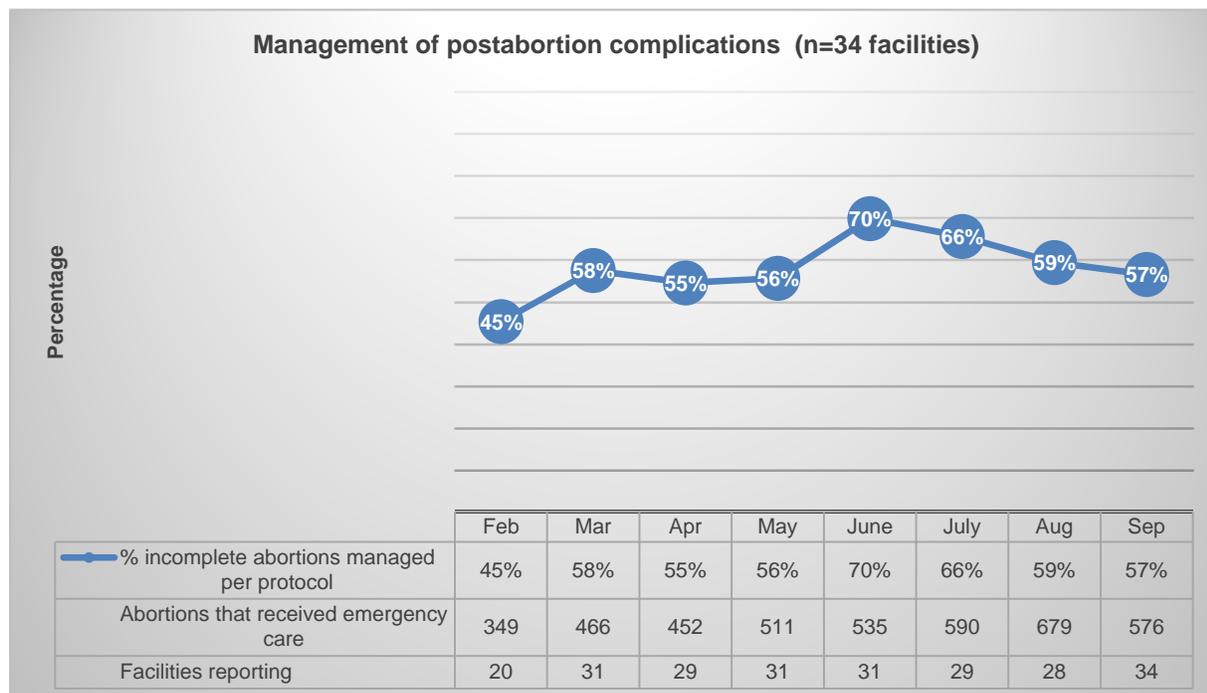


**Figure 8. Percentage of women with severe pre-eclampsia managed per protocol (Feb – Sept 2014)**



**Management of complicated incomplete abortion.** The project is focusing at this phase in the prompt evacuation of complicated incomplete abortions to reduce the risk of septic abortion. As of July 2014, compliance with prompt management of incomplete abortion had increased by 21 percentage points since the baseline assessment in February 2014, but performance decreased afterwards (Figure 9).

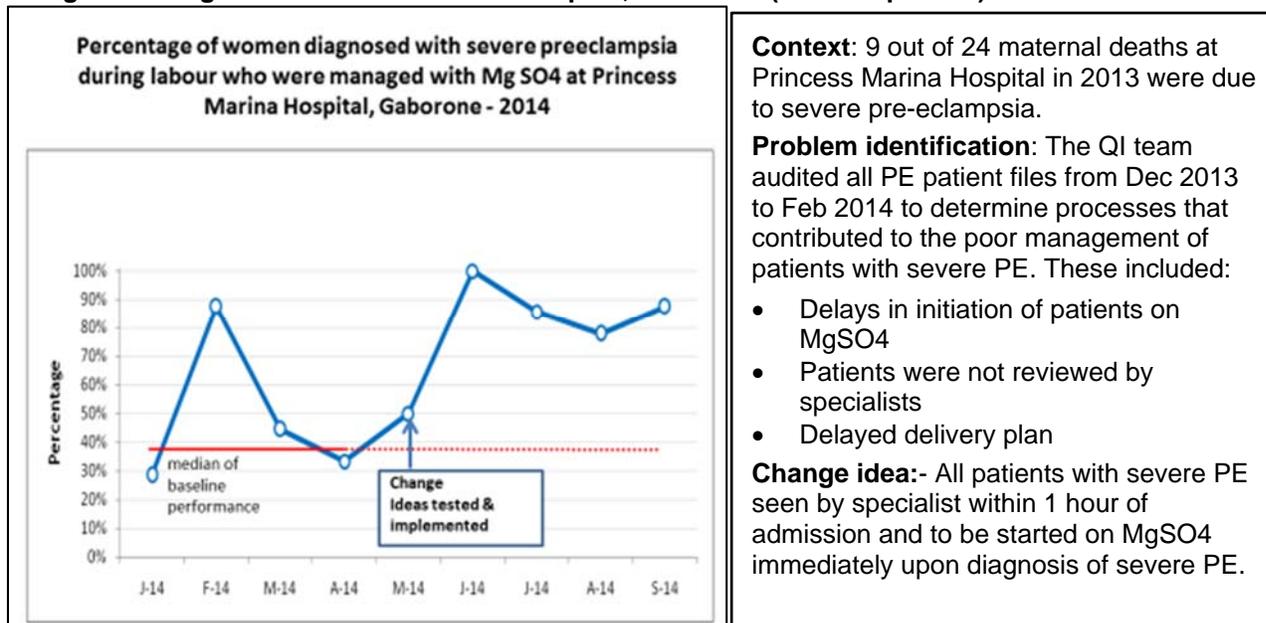
**Figure 9. Percentage of incomplete abortions evacuated within two hours of diagnosis (Feb – Sept 2014)**



- **QI team performance.** QI teams are showing better understanding of QI methodology—how to identify and test change ideas and determine if they led to an improvement. Some examples of facility-level improvements across several topic areas and districts include:

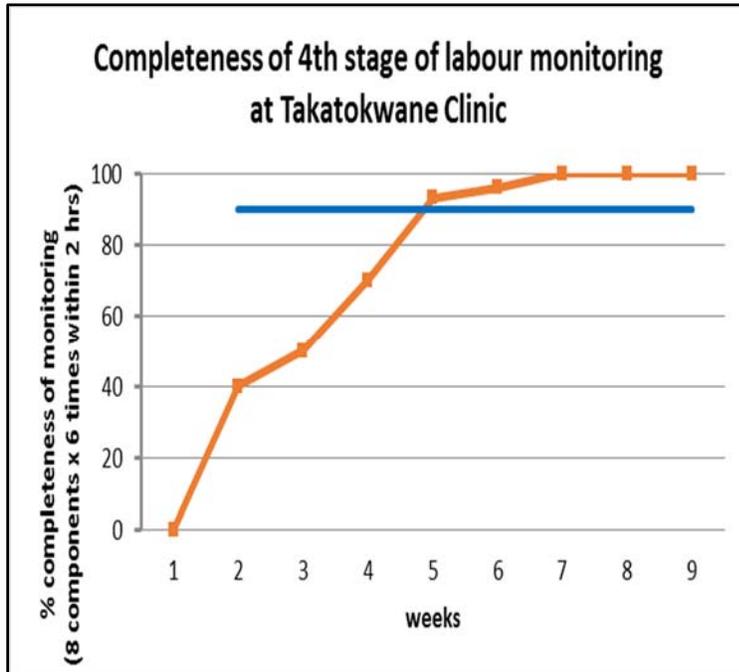
**Example 1.** Improvement in management of severe pre-clampsia in Princess Marina Hospital, Botswana’s largest referral hospital (Figure 10).

**Figure 10. Percentage of women diagnosed with severe pre-eclampsia during labor who were managed with MgSO4 at Princess Marina Hospital, Gaborone (Jan – Sept 2014)**



**Example 2.** Improving compliance with monitoring of the 4<sup>th</sup> stage of labor at Takatokwane maternity clinic (Figure 11)

**Figure 11. Percentage completeness of monitoring, Takatokwane Clinic (June – Aug 2014)**



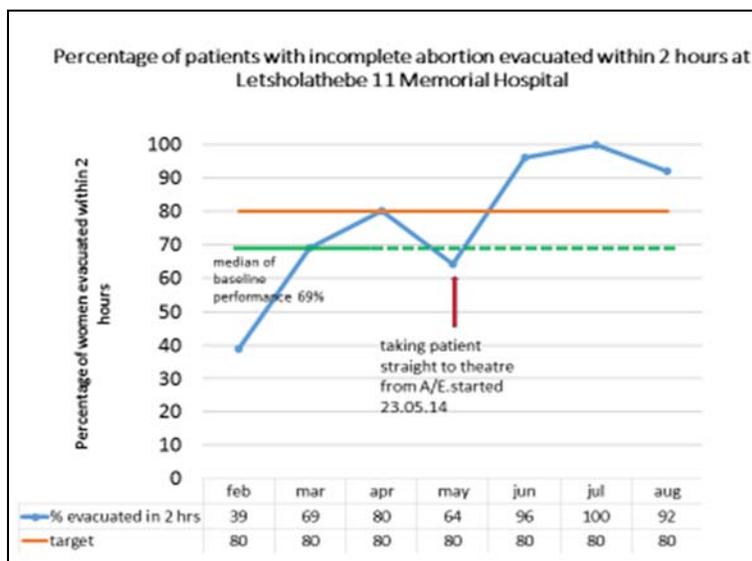
**Context:** Midwives in Takatokwane Clinic were not monitoring for the 4<sup>th</sup> stage of labor, resulting in patient neglect and late identification of complications such as post-partum hemorrhage.

**Problem identification:** By looking at the obstetric records, staff were made aware of the gaps in monitoring the 4<sup>th</sup> stage of labor. Staff were reminded of the importance of monitoring the 4<sup>th</sup> stage.

**Change ideas** included calling the second midwife if the one on staff is too busy to monitor the 4<sup>th</sup> stage; supervisor providing increased support; and auditing patient cards when giving report to the other midwives. As a team it was agreed that they would initially start monitoring the 4<sup>th</sup> stage four times. After they adapted to this, they would increase to five times and finally to six times.

**Example 3.** Improving management of incomplete abortion in Letsholathebe Hospital (Figure 12).

**Figure 12. Percentage of patients with incomplete abortion evacuated within 2 hours, Letsholathebe 11 Memorial Hospital (Feb – Aug 2014)**



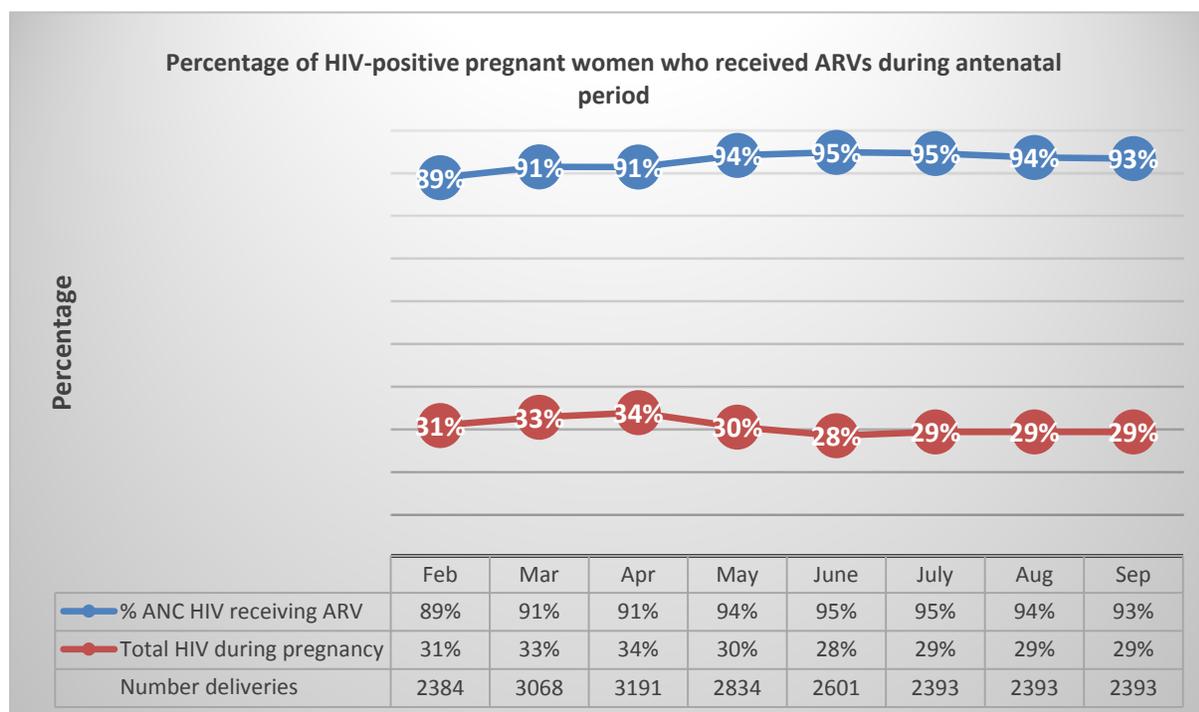
**Context.** The facility had had a maternal death of a 17 year-old girl with an incomplete abortion whose uterine evacuation had been delayed. She eventually became septic and died. Data confirmed delayed evacuations and resultant sepsis were not uncommon.

The **change idea** was to have patients with incomplete abortions sent directly to theatre from A&E instead of first being admitted to the inpatient ward. This reduced the patient waiting time and resulted in quicker evacuations of patients with incomplete abortions.

- QI team performance has been affected in several districts due to health problems of some coordinators that kept them out of work for several months. Other coordinators showed poor compliance with visits and with supporting QI team formation and coaching. As a result, no data were received from facilities in five districts (three coordinators' catchment area) during July, August, and September.

- HIV prevalence among pregnant women.** As seen in the Maternal Mortality Report (2007-2011), maternal mortality is three times more frequent in pregnant women who are HIV-positive compared to those who are negative. As such, a reduction in maternal mortality will be directly dependent on improving appropriate management of HIV. The HIV prevalence rate in Botswana among adults aged 15 to 49 is 21.9% (2013)<sup>8</sup>, but we are finding a higher prevalence rate (30%) among pregnant women. On average, 92% of HIV-positive pregnant women were receiving ARVs during antenatal care (Figure 13).

**Figure 13. Percentage of HIV-positive pregnant women receiving ARVs during ANC (Feb – Sept 2014)**



- Preliminary analysis of maternal mortality in Botswana in 2014.** A preliminary time series analysis of the number of maternal deaths since January 2013 showed a shift in the number of maternal deaths in 2014, with six consecutive points measured below the median baseline for 2013 (Figure 14). We need to interpret this graph positively but also with caution as we have learned that there is a seasonal peak in mortality around the end of the year that could affect these encouraging findings.

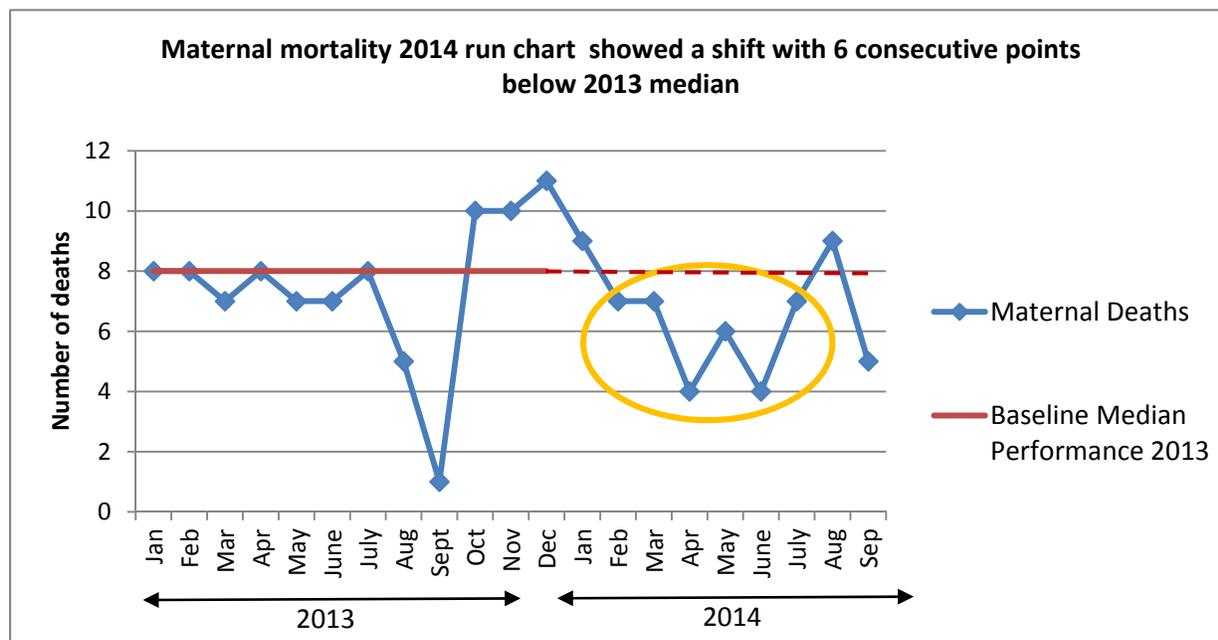
## 4 Sustaining and Institutionalizing Improvement

By design, the MOH of Botswana has complete ownership of the MMRI. All operational costs are being covered by the MOH. ASSIST is solely providing technical assistance and the salary for the National Coordinator, who is based within the MOH.

A long-term objective of the collaboration between the USAID ASSIST Project and the MOH is to provide high level and operative level capacity building in quality improvement methods applied to the health sector and to effectively create an environment suitable for implementation of quality improvement approaches at scale in the health system in Botswana in a way that will achieve sustainability and will maintain health improvements over time.

<sup>8</sup> UNAIDS. HIV and AIDS estimates 2013. <http://www.unaids.org/en/Regionscountries/Countries/Botswana/>

**Figure 14. Maternal mortality run chart for maternal deaths showed a shift (with six consecutive points below median baseline) in maternal deaths occurring in 2014 (Jan 2013 – Sept 2014)**



## 5 Knowledge Management Products and Activities

In 2014, ASSIST conducted two QI learning/sharing workshops to provide midwife coordinators a forum to share lessons learned and best practices in facilitating QI teams to identify changes they could test and eventually implement effective change ideas. The project is in the process of compiling the lessons learned from these workshops and distilling them into cases studies and reports for future use, both internally within Botswana and externally.

## 6 Directions for FY15

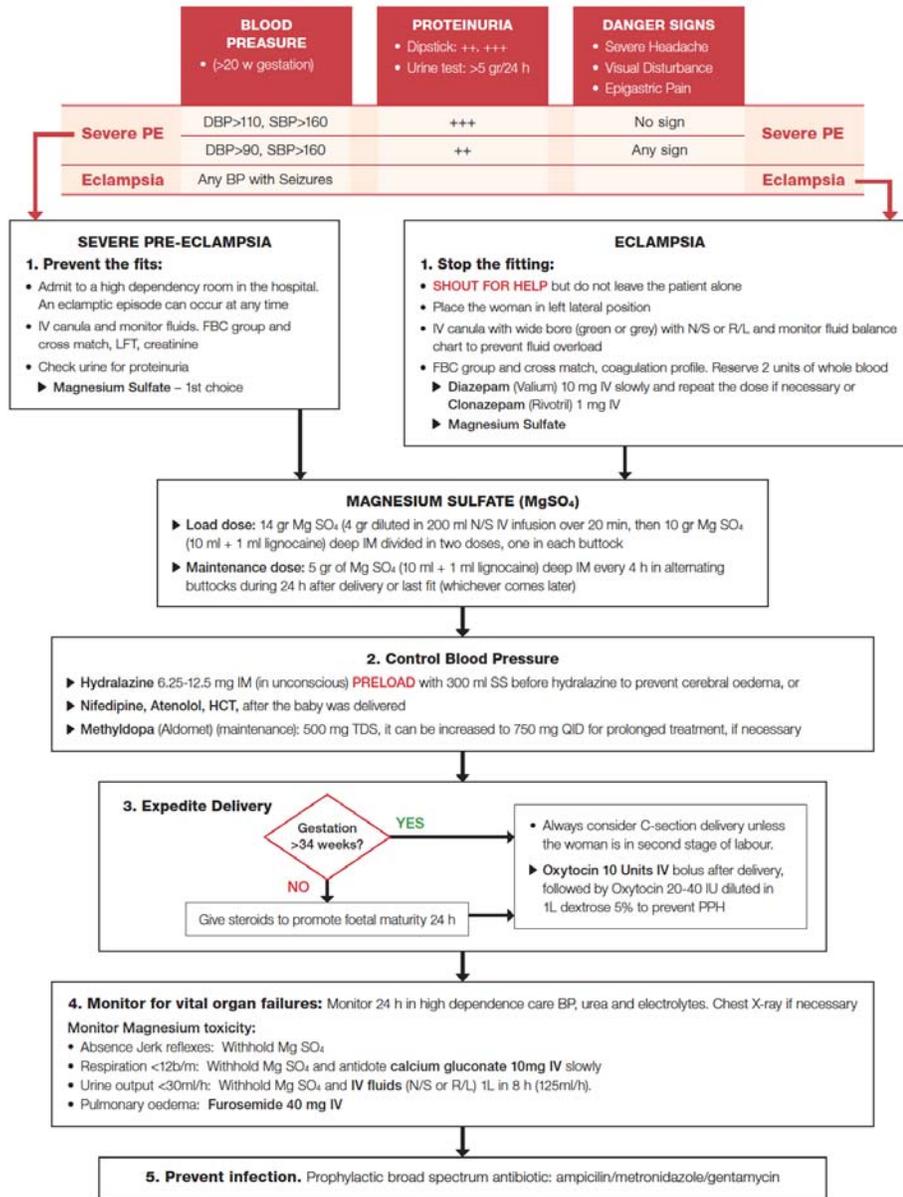
- **Conduct quality improvement training.** A QI training session will be conducted at the beginning of December 2014 in Gaborone to introduce QI methodology for three new midwife coordinators that will be hired to replace existing coordinators, as well as to serve as a refresher for some coordinators. During the training session, coordinators will also be trained in the use of data collection/reporting tools and supervision of the quality of data collected at the facility level.
- **Continue providing support in QI team formation and monthly coaching visits to each regional coordinator in their respective districts and facilities.**
- **Continue providing capacity building at the MOH for data analysis and interpretation of results.** ASSIST Botswana will continue with capacity building activities designed to improve the ability of personnel from the SRH Department of the MOH to manage and analyze reported data and produce meaningful reports to meet requirements and allow the MOH to make informed decisions.
- **Support verification and validation** of data collected and reported in the facilities.
- **Support the MOH to strengthen health systems through:**
  - Data analysis and reporting: ASSIST will continue analyzing data reported through the project's M&E system, as well as from the national maternal mortality audits and other mechanisms, such as the drug stock-out reports.
  - The design of a quality improvement framework
  - Proposing changes to the MOH to prevent seasonal mortality peaks during the months of November-January.

- **Knowledge management:** During FY15, the project will conduct two to three additional learning/sharing workshops to provide a forum for the midwife coordinators to share the progress of their improvement work at the facility level and to facilitate sharing of best practices between coordinators (and facilities) for the replication of effective changes. At the end of the project we will conduct a harvest workshop to capture and synthesize lessons learned.
- **Dissemination of project information:**
  - Support the dissemination of critical findings and lessons learned at national MOH meetings as well as at the MOH quarterly review meetings through the presentation of several reports, including a project baseline report, annual report, and quarterly reports
  - Conduct quarterly reference group meetings
  - Periodic meetings with the Permanent Secretary of the MOH
  - Advocacy meetings with District Health Management Teams and directors of hospitals and clinics
  - Document lessons learned, success stories, best practices, and challenges
- **Continue providing support to the National Maternal Audit Committee for analysis and presentation of findings from maternal audits**

# 7 Appendix

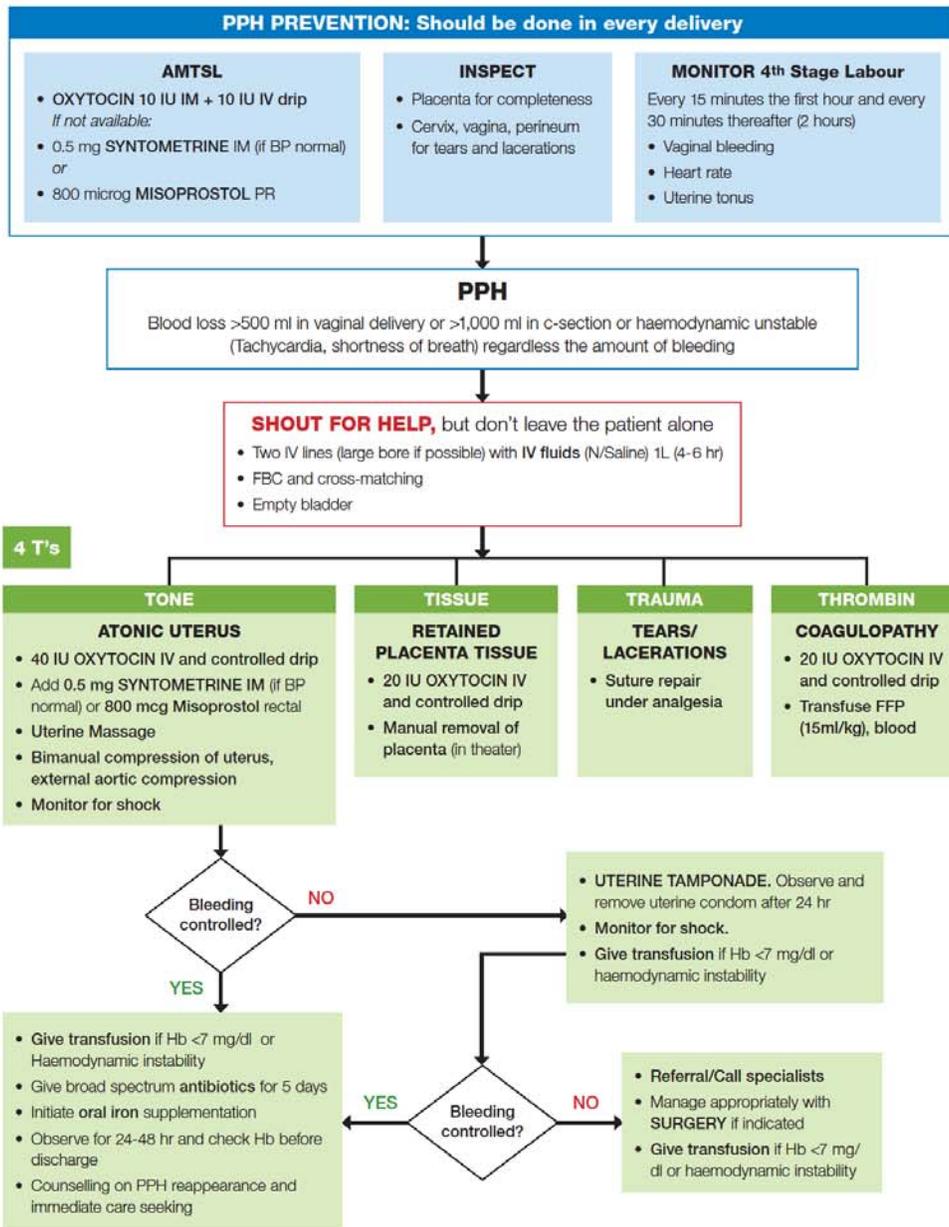


## Pre-Eclampsia/Eclampsia Management





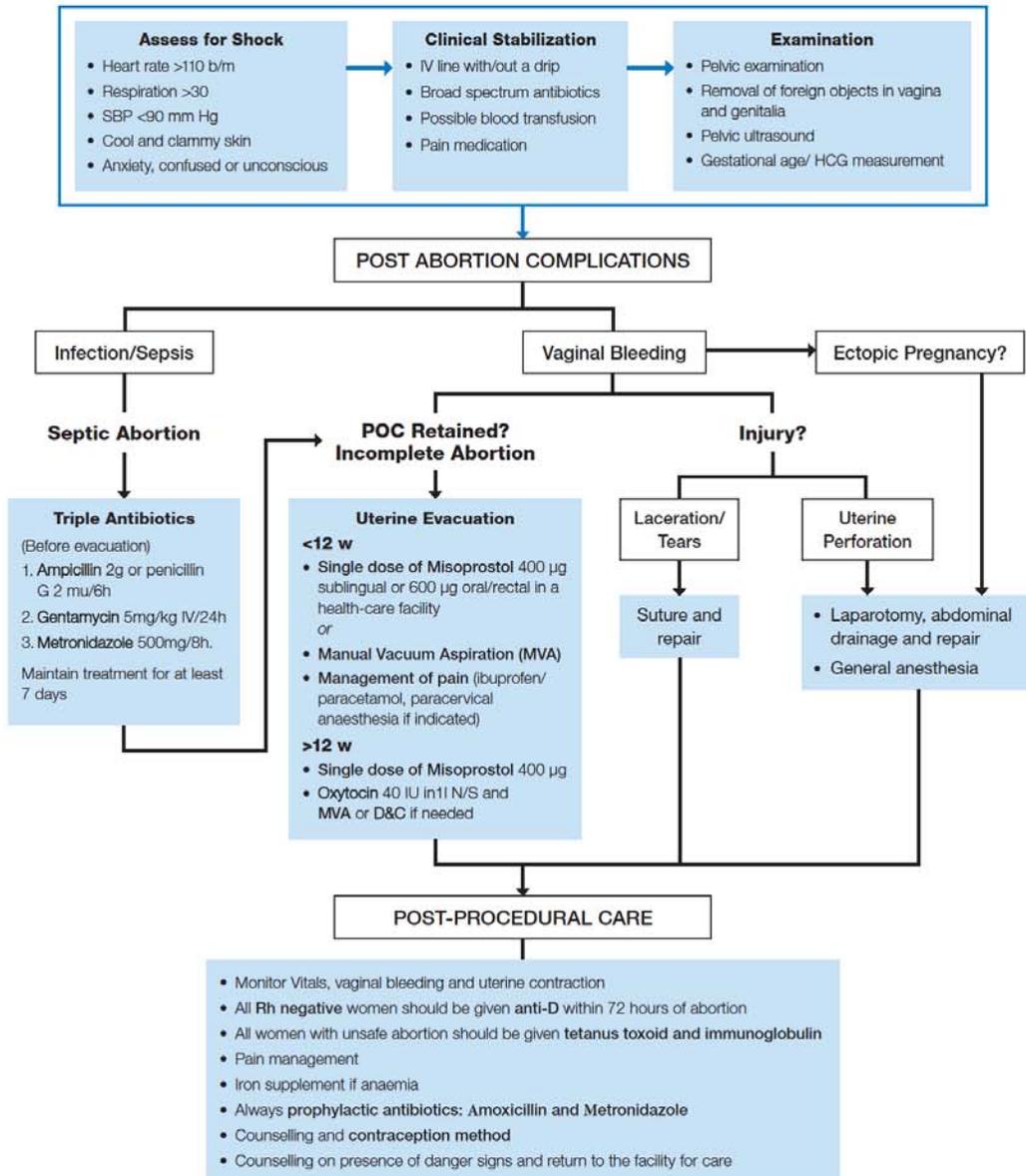
# Postpartum Haemorrhage Prevention, Early Diagnosis and Management Flow Chart





# Post Abortion Complications Care

Suspect abortion in woman of reproductive age, delayed menses with vaginal bleeding, cramping or lower abdominal pain





**USAID APPLYING SCIENCE TO STRENGTHEN  
AND IMPROVE SYSTEMS PROJECT**

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