PREVENTION OF POSTPARTUM HEMORRHAGE IN LIBERIA: INCREASING ACCESS TO EVIDENCE-BASED INTERVENTIONS

PROGRAM DESCRIPTION

The Ministry of Health and Social Welfare (MOHSW), Republic of Liberia, with technical support from the USAID- funded Maternal and Child Health Integrated Program (MCHIP), is implementing a program for the prevention of postpartum hemorrhage (PPH) for facility births and home births. The program strengthens Active Management of the Third Stage of Labor (AMTSL) and management of PPH at health facilities as well as counseling and advance distribution of misoprostol by health care providers and district reproductive health supervisors (DRHSs) to pregnant women for self-administration at home births. The intervention is being implemented in two districts: Campwood district and District #3 in Grand Bassa County. The learning phase was implemented from December 2012 to June 2013.

The program was designed by the MOHSW with the assistance of MCHIP. Within MCHIP, the technical guidance and assistance was provided by Jhpiego and John Snow, Inc (JSI). Venture Strategies Innovations (VSI) supplied the misoprostol. A dose of 600 µg of misoprostol (3 x 200-µg tablets taken orally) was chosen for this intervention. This brief summarizes the process and results from the learning phase of the program, wherein certain implementation questions are answered. The results of the learning phase will guide the MOHSW and its partners in determining next steps for expansion of the intervention to other districts.

Key Activities Implemented

Facility Level

- Clinical capacity building of Skilled Birth Attendants (SBA) in nine health facilities to provide AMTSL—especially the use of uterotonic immediately after birth in health facilities.
- Training of facility-based antenatal care (ANC) health workers to counsel pregnant women on birth preparedness, distribution of misoprostol to eligible pregnant women at/after 32 weeks of gestation for self-administration after home birth, collection of data, and completion and submission of reports on that data.
- Monthly meetings at facilities for Trained Traditional Midwives (TTMs) for the purpose of refreshing and supervision, as well as to allow for reporting.

Key Maternal Health Statistics for Liberia

- Maternal mortality ratio: 994 maternal deaths / 100,000 live births
- Antenatal care (first visit): 79%
- Antenatal care (4 visits): 66%
- Facility-based delivery: 37%

** Liberia DHS, 2007*

Community Level

- Training of Trained Traditional Midwives (TTMs) in community mapping, referral of pregnant women to health facilities for ANC, and information about PPH and use of misoprostol.
- Training of DRHSs on home-based counseling on PPH and use and distribution of misoprostol at home to those women for their self-administration after home birth, data collection and reporting.

Monitoring and Evaluation

Regular supportive supervision was provided throughout the implementation phase. At facilities, SBAs were supervised using an observation checklist for counseling and AMTSL, either with clients or on anatomic models. Each of the eight* facilities was visited at least once. DRHSs were supervised using the education session observation checklist at the community level.

** One facility out of the original nine was removed early from the intervention group because there was no health worker to be trained.*

Monitoring was conducted throughout the implementation phase. Routine data were collected as part of service delivery on number of women counseled and provided misoprostol, both at health facility and community level. Disposition of misoprostol was monitored by women either bringing the misoprostol with them if they came to a facility for their birth, or bringing the empty packet when bringing the baby for routine immunization if they used it at a home birth. Data collected were used in monitoring progress of the intervention and steering action for improving coverage of counseling and distribution of misoprostol.

A sub-sample (n=550) of women who received misoprostol during the implementation phase (n=980) was followed up and administered a questionnaire to: determine their experience taking misoprostol; capture their knowledge on counseling provided by SBAs or DRHSs; and to understand their satisfaction levels with self-administration of misoprostol after home birth.

To evaluate program effectiveness, the following questions were assessed through the learning phase: 1) coverage of education and advance distribution of misoprostol through ANC and DRHSs; 2) uterotonic coverage at both facility and home births; 3) effectiveness of counseling at increasing women's PPH-related knowledge; 4) reported side effects and complications; and 5) acceptability of misoprostol to Liberian women.

This project was approved by the Institutional Review Board at the Liberian Institute of Biomedical Research and the Johns Hopkins University Bloomberg School of Public Health, U.S.A.

PROGRAM RESULTS

Implementation Area and Capacity Building

Eight health facilities were included in implementation including one general hospital and seven clinics. One clinic (Sue Town) initially was included then removed from the intervention because no health worker was posted there. At the facility level, a total of 17 SBAs were trained on AMTSL and counseling and advance distribution of misoprostol to women at/after 32 weeks of gestation for self-administration. DRHSs in the two districts also were trained on misoprostol counseling and distribution at household level, and County Reproductive Health Supervisors were trained for program supervision. To create demand for ANC services and better reach pregnant women, a total of 160 trained traditional midwives (TTMs) were trained on mapping pregnant women in the communities, referring them to health facilities for ANC, and the dangers of PPH and role of misoprostol in preventing PPH.

Table 1: Number of Health Facilities and Health Workers Trained

Indicator	Number
Total population covered in the two districts	**69,322**
Number of health facilities, by type:	
General Hospital	1
Clinics	7
Number of health workers trained, by cadre and intervention:	
SBAs trained in counseling, misoprostol distribution and AMTSL	17
DRHSs trained in misoprostol counseling and distribution	2
CRHSs trained in supportive supervision	2
TTMs in mapping pregnant women , messages for PPH/misoprostol	160

Coverage of ANC, Counseling and Advance Distribution of Misoprostol

During this learning phase, 1,826 pregnant women were expected in the intervention area. A total of 980 (53%) of pregnant women were contacted and enrolled in the program. Of these, 766 (78%) were contacted and enrolled at the health facilities during ANC visits, and 214 (22%) were contacted at home by a DRHS. According to the LDHS 2007, ANC 4 rate for Liberia was 66%, whereas ANC 4 rate in Grand Bassa was 59.6%. In this intervention, however, 42% (766/1826) of women in the target area in Grand Bassa received counseling and misoprostol through ANC services, making misoprostol distribution rate less than the local ANC 4 rate. If 42% of women got their misoprostol through ANC, and 59.6% had 4 ANC visits, health care providers reached 70% of women who came for ANC. Women were provided misoprostol during either the facility or the community interaction, but not both, to prevent double distribution.

Table 2: Misoprostol Distribution Rate Women who Received PPH Prevention Package of Counseling and Advance Distribution of Misoprostol

Indicator	Number	Percentage
Estimated number of pregnant women	1,826	–
Distribution rate: Pregnant women, of total estimated pregnancies, provided counseling and misoprostol	**980**	**53.7%**
At ANC by health care provider	766	78%
At home by DRHS	214	22%
Percentage of expected pregnant women not reached	**846**	**46.3%**

Table 3: Uterotonic Coverage Rate: Percentage of All Women who Delivered and Received a Uterotonic Immediately after Birth, by Place of Birth

Indicator	Number of deliveries	Received Oxytocin/ Misoprostol	Percentage
Total uterotonic coverage rate	**1783***	**941**	**52.7%**
In health facilities	692*	676	97.6%
At home births	1091**	265	22.8%

** Recorded vaginal deliveries only. 68 deliveries were reported as caesarean deliveries. Since provision of uterotonic to those women is unclear, these births have been excluded from this calculation*
*** Total expected number of home deliveries (calculated as 1783 – 692)*

In the national clinical protocols use of a uterotonic for women who are delivered by cesarean section is not explicitly stated. For this analysis, therefore, they (n=68) have been excluded; thus vaginal births in the facilities totaled 692. As a result of this PPH prevention intervention, 676 (98%) women delivering in health facilities received oxytocin, as collected through the project registers at the health facilities. Of the estimated deliveries expected at home (n=1091) only 265 (23%) women took misoprostol for self-administration after home birth.

The overall Uterotonic Use Rate for expected deliveries in two districts is estimated to be 53%.

Deliveries at Health Facilities

Figure 1: Number of Deliveries in Participating Facilities (Dec 2012–June 2013)

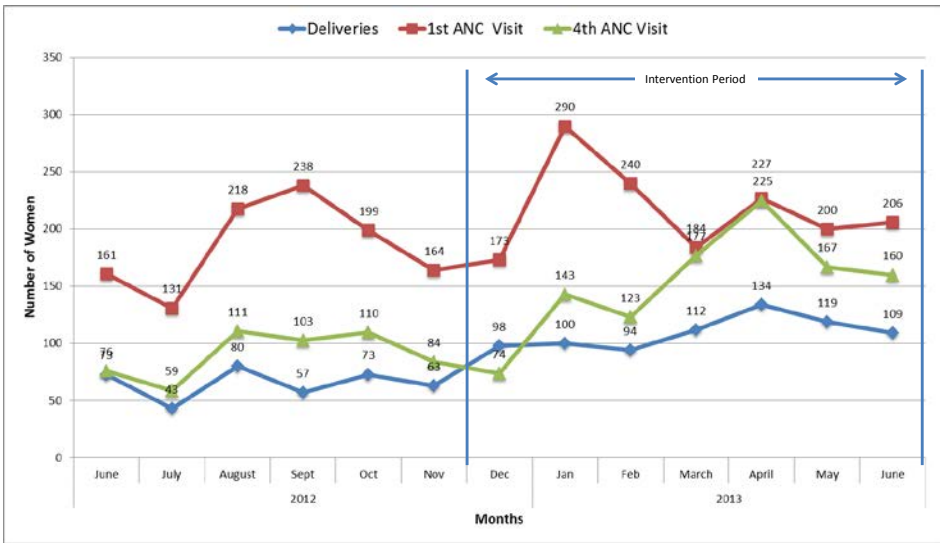

Figure 1 presents numbers of women who received 1 and 4 ANC visits, and number of deliveries, in participating health facilities during the learning phase (collected from health facility registers). The trend line shows increased numbers of ANC4 visits and deliveries in the participating health facilities from the start of the intervention. Before this intervention, policy allowed only SBAs to provide a uterotonic, which was recorded on the partograph or the woman's hospital record. This indicator is not currently captured in the country's Health Management Information System (HMIS).

Postpartum Follow-up Interview: Use of Misoprostol for Home Births

A total of 550 women enrolled during the intervention were randomly selected and followed-up at home to collect data on their use and knowledge of misoprostol, planning for delivery, and satisfaction after using misoprostol.

Table 4: Place of Birth and Use of Misoprostol among Women Provided Misoprostol (Follow-up Sample of 550 Women)

Indicator	Number	Percentage
Reported place of delivery for women	(n = 550)	
Health Facility	248	45.1%
Home	302	54.9%
Self-administration of misoprostol	(n = 302)	
Home births who took misoprostol	265	87.7%
Home births who did NOT take misoprostol	37	12.3%

A high proportion of women counseled during pregnancy reported using misoprostol at a home birth. The data in Table 4 show that a total of 88% (265/302) of women who were provided misoprostol during pregnancy self-administered it. In addition, a large number of women provided misoprostol (45%) still came to a facility for their delivery. Those women returned the unused

misoprostol packets at the facility. Per protocol, the facility staff then destroyed that dose of medication as it would be considered unsafe to provide that medication to another patient.

Table 5 shows number of women who ingested the medication at the correct time, as determined by the follow up survey. Overall, 65% took the medication at the correct time and 34% incorrectly took the medication after the delivery of the placenta. Three women (1%) reported taking the medication prior to the delivery of the baby. Their reasons are unclear, but women reported no effect as a result.

Table 5: Correct and Incorrect Use of Misoprostol, by Source of Counseling

Indicator	Total (n=265)	Health Care Providers (n=166)	DRHSs (n=99)
Misoprostol taken CORRECTLY (immediately after delivery of baby AND before delivery of placenta)	167 (65.1%)	117 (71.3%)	50 (53.8%)
Misoprostol taken INCORRECTLY (BEFORE delivery of baby)	3 (1.1%)	2 (1.3%)	1 (1.0%)
Misoprostol taken INCORRECTLY (AFTER delivery of baby and placenta)	87 (33.8%)	45 (27.4%)	42 (45.2%)

** Some women did not answer all questions; therefore, the denominator is not always based on the 'n' of 265.*

Birth Planning and Women's Correct Knowledge about PPH and Misoprostol

Table 6 presents results from the follow-up interviews. Around half of the women interviewed had made some arrangements for transportation for delivery, and slightly higher number of women had saved money for an emergency. Results were similar whether women were counseled by health care providers or by DRHSs.

Table 6: Birth Planning, by Source of Counseling

Indicator	Health Care Providers (n=401)	DRHSs (n=149)
Arranged for transport during delivery	182 (45.4%)	81 (54.4%)
Saved money for delivery	264 (65.8%)	103 (69.1%)

** Some women did not answer all questions, therefore the denominator is not always based on the 'n'.*

Women also were asked what they learned during counseling about danger signs during pregnancy, signs of excessive bleeding, how misoprostol works, and when to take the medication. The results showed that women's recall of what they learned was very high. More than 80% of women responded correctly to all of these questions (Table 7). Knowledge levels were similar irrespective of their source of information.

Table 7: Women's Knowledge of Misoprostol, by Source of Counseling

Indicator (Correct knowledge about…)	Health Care Providers (n=401)	DRHSs (n=149)
Danger signs during pregnancy (at least one)	339 (84.1%)	125 (83.9%)
Signs of excessive bleeding	328 (81.7%)	136 (91.2%)
Purpose of misoprostol to reduce bleeding	383 (95.5%)	147 (98.7%)
Timing of self-administration	383 (95.5%)	147 (98.7%)
Number of pills to take	384 (95.8%)	147 (98.7%)
Side effects of misoprostol (at least three side effects)	293 (73.9%)	138 (92.6%)

** Some women did not answer all questions, therefore the denominator is not always based on 'n'*

Women's Satisfaction with Misoprostol

From postpartum follow-up interviews, a very high proportion of women who reported giving birth at home and taking misoprostol (n=265) reported being satisfied with their use of the medication. As shown in Table 8, a high proportion of women who took the medication expressed satisfaction in terms of willingness to take it again if pregnant and intention to recommend it to a friend or relative. Fewer women, however, said they would be willing to pay 5 Liberian Dollars (LD) (~$0.06 USD) for the three tablets. Their willingness to pay may be influenced by the declaration of the MOHSW that medications are to be provided free of cost.

Table 8: Women's Reported Satisfaction, by Source of Counseling

Indicator	Health Care Workers (n=166)	DRHSs (n=99)
Women who were satisfied with use of misoprostol:		
Would recommend misoprostol to a friend	165 (100%)	93 (98.9%)
Agreed to pay 5 LD	92 (58.4%)	50 (61.7%)
Would take misoprostol for next delivery	162 (98.2%)	92 (97.9%)

** Some women did not answer all questions, therefore the denominator is not always based on 'n'*

Side Effects, Adverse Events, Obstetric Complications and Referrals

The women who used misoprostol during home births (n=265) were asked during the postpartum follow-up interview if they experienced any minor side effects (Table 9). Fifty-four percent (54%) of women indicated that they experienced at least one minor side effect including dizziness, nausea, shivering, vomiting, fever, abdominal cramping or watery stools. The majority reported that the side effects subsided after 30-60 minutes.

Table 9: Side Effects, Adverse Events, Obstetric Complications and Referrals

Indicator	Number (n=265)
Experienced a minor side effect	143 (53.9%)
Experienced an adverse event	0 (0.0%)
Indicated bleeding was more than previous delivery	41 (15.5%)
Referred to a health facility due to complications	4 (1.5%)

There were no adverse events (defined as uterine rupture, fever more than 40 degrees, or death of a woman enrolled in the intervention) reported during the learning phase. Forty-one women indicated bleeding more than previous deliveries; four women were referred for retained placenta or bleeding.

Health Care Providers' and DRHSs' Knowledge of Misoprostol

Health care providers (9) and DRHSs (2) trained in PPH interventions were asked questions to measure their knowledge about misoprostol as a follow-up to the training. As shown in Table 10, nearly all providers and DRHSs correctly described how misoprostol works and when the woman should self-administer misoprostol.

Table 10: Health Worker and DRHSs Knowledge

Indicator	Number	Percentage
Health care providers/DRHSs who know how misoprostol works	10	90.9%
Health care providers/DRHSs who know when to administer misoprostol	11	100%

Availability of Oxytocin and Misoprostol at Distribution Points

During the learning phase the misoprostol was delivered to the county depots from the National Drug Service, the routine for distribution mechanism for medicines in Liberia. Supportive supervision was provided by a team of MOHSW and county health officers and MCHIP staff who regularly monitored and tracked misoprostol and oxytocin availability. As shown in Table 11, only one clinic (Desoe) reported stock-out of misoprostol during one month, due to transportation problems. There were no recorded stock-outs of oxytocin from any of the facilities.

Table 11: Uterotonic Stock-outs

Indicator	Number
Number of health facility-months of reported stock-outs of misoprostol	1
Number of health facility-months of reported stock-outs of oxytocin	0

SUMMARY OF FINDINGS

- It is feasible in rural counties of Liberia to implement a PPH prevention intervention combining improved services at health facilities and a community focus to reach women who were unable to deliver at health facilities. Overall, uterotonic coverage of 53% of all estimated deliveries (facility and home births combined) was achieved.
- It is safe to provide women with a dose of misoprostol in advance of their delivery for self-administration after the birth should they deliver at home. There were no adverse events reported. When women delivered at home and had a dose of misoprostol, 88% of them reported taking it. A substantial proportion (34%) of women, however,

incorrectly took the medication after the delivery of the placenta. There were three women who took the medication prior to the birth of the baby, but no adverse events were reported.

- The use of oxytocin immediately following delivery in a facility is very high for vaginal births; records indicate that almost 98% of women who delivered in the facility received oxytocin.
- Advance distribution of misoprostol for self-administration at home birth does not reduce the numbers of women coming to deliver at facilities. In general, the number of facility births in the two districts started to increase before the intervention and continued to increase following the start of the intervention.
- Reaching pregnant women at home only through involvement of DRHSs was challenging and only minimally effective. Of the women who delivered at home, only 22% were reached at the community level by DRHSs. The limited ability of DRHSs to reach pregnant women may be related to the expectation that the DRHS would visit 400–500 women for counseling and misoprostol distribution.
- Use of ANC services was only moderately better in distributing the misoprostol. Of the 1851 anticipated births in the catchment area, only 41% were reached through ANC, compared with rates of ANC (four visits) in Grand Bassa of 66%. When women came for ANC, only 3 out of 5 were provided misoprostol and its accompanying counseling.
- Misoprostol is acceptable to pregnant women for PPH prevention. About 98% of the women who took misoprostol said that if become pregnant again they will take the medication and would recommend the medication to a friend or relative. Only about 50% of these women however expressed the willingness to pay 5 LD for it.
- VSI successfully provided misoprostol for this learning phase. UNFPA has been engaged and has ordered sufficient supplies for scale-up that could meet the needs of Bong and Grand Bassa counties.

KEY LESSONS LEARNED AND ACTIONS TO BE CONSIDERED

- MOHSW and the county health team participation was fundamental for successful implementation.
- Efforts to increase uterotonic coverage at both facility and home births will ultimately reach and benefit the greatest number of pregnant women. This program showed that uterotonic coverage in the third stage of labor was nearly universal (98%) among facility births. Therefore, focus is needed to increase uterotonic coverage for home births. The combined efforts of DRHSs and health care providers yielded 53% coverage among all births.
- To reach the maximum numbers of pregnant women at the community level, community-level workers need to be involved. While TTMs can be used to mobilize women to come for ANC, relying mostly on the health system (ANC plus the DRHS) has not provided high coverage. Engaging the TTMs more actively, potentially allowing them to distribute misoprostol as is done in similar settings in other countries, may be necessary to achieve the desired high coverage. Ultimately, more community engagement and additional innovative strategies may also be needed to reach the most remote and vulnerable women.
- The Liberian HMIS needs to be updated to incorporate uterotonic provision.
- Uterotonics for PPH prevention are provided for vaginal births, but may not be explicitly stated to be used in cesarean section. Given that these women also are at risk of PPH, the national protocols for administration of oxytocin (10 IU either IM or IV) to women during cesarean section should be updated.
- Supply chain management and commodity availability, to avoid stock-outs, must be addressed during scale-up. Appropriate packaging of misoprostol (3 tablets) is needed to ensure commodity integrity.
- Increased coverage together with increased facility-based births may result in significant amounts of misoprostol that is returned unused. Use and disposition plans must be developed to prevent wastage.
- Identification of women at community level for follow-up is difficult because they often register a different name at the facility then what they are known by in the community. In the absence of universal registration, additional information, such as a contact phone number, should be used.

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