

## A case study of community-based distribution and use of Misoprostol and Chlorhexidine in Sokoto State, Nigeria

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### ABSTRACT

The United States Agency for International Development/Targeted States High Impact Project supported Sokoto State, Nigeria government in the development of a community-based intervention aimed at preventing post-partum haemorrhage (PPH) and cord infection among women and children, respectively. This paper describes the innovative intervention within the Nigeria health delivery system. It then explains the case study approach to assessing this intervention and summarises findings. Ultimately, the intervention was received well in communities and both drugs were added to the procurement list of all health facilities providing maternity services in the State. Key factors leading to such success include early advocacy efforts at the state-level, broad stakeholder engagement in designing the distribution system, early community engagement about the value of the drugs and concerted efforts to monitor and ensure availability of the drugs. Implementation challenges occurred in some areas, including shortage of community-based health volunteers (CBHVs) and drug keepers, and socio-cultural barriers. To maximise and sustain the effectiveness of such interventions, state government needs to ensure constant drug supply and adequate human resources at the community level, enhance counselling and mobilisation efforts, establish effective quality improvement strategies and implement a strong M&E system.

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## Background

Maternal and neonatal mortality rates are high in Nigeria, and Sokoto State has among the highest rates in the country: maternal mortality is 575/100,000 live births; neonatal mortality is 44/1000 live births (National Population Commission & ICF International, 2014). Post-partum haemorrhage (PPH) is a leading cause of maternal deaths (World Health Organization [WHO], 2012) and cord sepsis for neonatal deaths (Karumbi, Mulaku, Aluvaala, English, & Opiyo, 2013; Lawn, Cousens, & Zupan, 2005) in under-resourced areas where home births are common. The 2013 Nigeria Demographic Health Survey (NDHS) reports that 94% of births in Sokoto State occur in the home, and most of these women have limited access to health facilities or skilled attendants (National Population

Commission & ICF International, 2014). Labouring women are largely assisted by Traditional Birth Attendants (TBAs) (85%) in the home, followed by relatives (8%), or skilled providers in the facility (5%) (2014).

In settings where skilled birth attendants are not present and oxytocin is unavailable, WHO recommends administering 600 micrograms of Misoprostol to all women immediately after giving birth to prevent PPH (WHO, 2012). Misoprostol administered on its own has been proven to be 90% effective (Raghavan, Abbas, & Winikoff, 2012). Similarly, cord care infection can be prevented by applying the topical antiseptic, Chlorhexidine 4% gel, to the umbilical cord stump during the first week of life (Imdad et al., 2013; WHO, 2013). Both drugs have been observed to be effectively and efficiently administered by non-skilled attendants in the home (WHO, 2012, 2013).

While the efficacy of Misoprostol and Chlorhexidine is well documented, acceptance of their use can pose challenging due to legal and cultural issues (Geller, Adams, Kelly, Kodkany, & Derman, 2006; McClure, Goldenberg, Brandes, Darmstadt, & Wright, 2007; Winikoff & Starrs, 2012). Misoprostol can also be used to induce abortion which is legally restricted in Nigeria, thus some may confuse its purpose in reducing PPH. Further, the incidence and severity of cord-related infections in Nigeria is worsened by harmful practices such as the application of cow dung and other substances (McClure et al., 2007; Asu, Gever, & Joshua, 2013).

## Programme and intervention description

The United States Agency for International Development (USAID)/Targeted States High Impact Project (TSHIP) supports Bauchi and Sokoto State government in northern Nigeria to increase the use of lifesaving maternal, new-born and child health and family planning/reproductive health (MNCH/FP/RH) interventions. This was a six-year project (2009–2015) implemented in all 20 local government areas (LGAs) in Bauchi state and 23 LGAs in Sokoto State.

After a 2012 review on programme efforts to reduce maternal and infant mortality in households, USAID/TSHIP discussed developing a community-based intervention benefiting both pregnant women and new-borns: administration of 600 micrograms of Misoprostol to all women immediately following childbirth to prevent PPH; and administration of the topical antiseptic Chlorhexidine to the umbilical cord stump of all infants at birth to reduce cord infection.

Prior to 2012, Misoprostol was utilised in Sokoto State on a very small scale by the faith-based organisation, Jamatu Nasril Islamic (JNI). JNI implemented a community-based Misoprostol distribution system in Gagi community that was adapted from a community-based participatory approach employed by Ejembi et al. in Northern Nigeria (2014).

The JNI model was adapted for the TSHIP Misoprostol intervention. Given the urgent need to also address neonatal mortality in Sokoto State, the Project considered joint community-based distribution of Misoprostol and Chlorhexidine 4% gel. Project staff conducted a deep-dive review of both peer-reviewed and grey literature, and conducted consultations with personnel from projects implementing similar interventions in Nepal (regarding distribution of Chlorhexidine 4% gel), Ghana and Senegal (regarding Misoprostol distribution) (Ejembi et al., 2014; Kapungu et al., 2013; Ortiz et al., 2010). Given

potential barriers to uptake, a plan was developed for advocating with state agencies for the adoption of these lifesaving drugs.

### ***Advocating for change***

The Project identified senior individuals within selected ministries who would be able to support the adoption of the intervention, by agreeing to help secure financing from the Office of the Governor to purchase the drugs, and helping to sustain the intervention over time. Advocacy efforts involved presentations to the state government institutions such as the Sokoto State Ministries of Local Government (MoLG), Health (MoH) and Women's Affairs and Social Development (MoWASD); the State Primary Healthcare Development Agency (SPHCDA); the Sultanate Council of the Sultan of Sokoto; and the Health Committee of the Sokoto State House of Assembly. Presentations shared research findings that demonstrated the value of Misoprostol and Chlorhexidine in saving the lives of women and infants. In March 2013, Sokoto State officially approved the distribution of both drugs and allocated resources for the procurement and community distribution of both drugs.

### ***The distribution method of Misoprostol and Chlorhexidine***

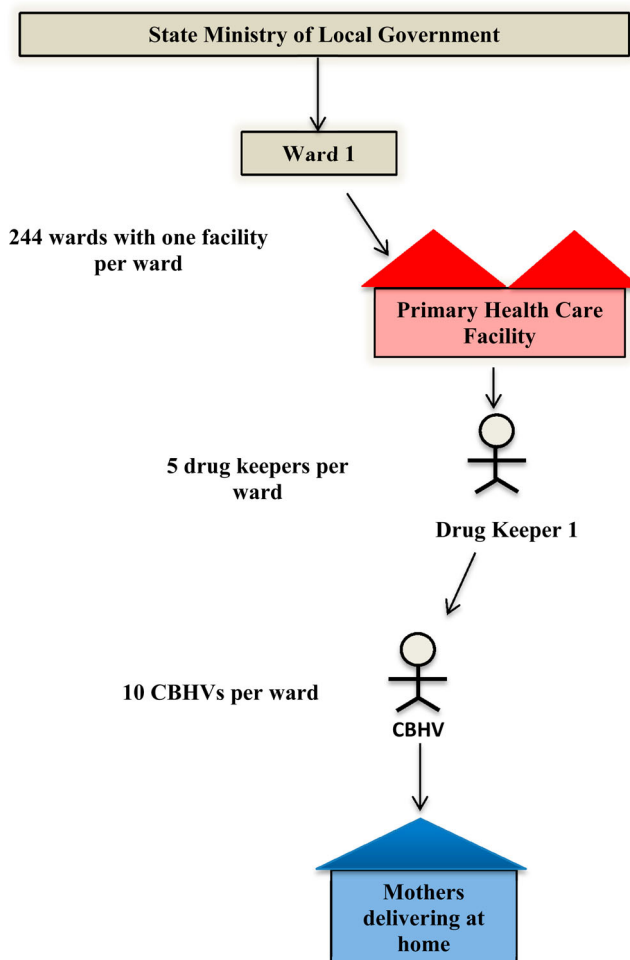
During advocacy efforts, the distribution system was discussed and carefully designed to ensure the drugs' acceptance among potential users, their spouses and providers (see Figure 1).

The MoLG forecasted the number of doses required for a scaled community distribution of both drugs in the state and purchased 56,832 doses of Misoprostol from Marie Stopes International and 56,823 doses of Chlorhexidine from Lomus Pharmaceuticals in Nepal. At the State store, the pharmacist prepared the shipments to health facilities (one per ward). In order to give ownership of the programme and medicines directly to the community, the MoLG delivered the shipments to chairmen of the Ward Development Committees (WDC) who in turn passed them on to the designated health facility in the ward. This facility was responsible for distributing and replenishing the drugs used at the health facility and community levels.

The MoLG distributed the same amount of drugs to each focal facility given that each LGA contributed equally to the procurement. Each facility received 200 doses of Misoprostol (one dose = three 200 microgram pills) and 200 doses of Chlorhexidine (one dose = one gel packet). The drugs were issued in four bins (i.e. 2 bins for Misoprostol with 100 doses in each bin; 2 bins for Chlorhexidine with 100 doses in each bin). The health facility started with one bin for each drug at a time: when one bin was empty, additional drugs were ordered.

Health facilities kept some of the drugs (50 doses of Misoprostol and 50 doses of Chlorhexidine) for use by women who gave birth at a facility or for those who came to the health facility after giving birth (having not taken Misoprostol, nor applying Chlorhexidine on their baby's cord within three hours of birth). Health facilities then distributed the drugs to local service providers or 'drug keepers', expected to be available at all times to distribute the drugs. There are approximately five drug keepers per ward, most of whom are members of the Ward Development Committee (WDC). When a woman goes into labour, a family

## Misoprostol and Chlorhexidine Distribution in Sokoto State, Nigeria



**Figure 1.** Community-based distribution model for misoprostol tablets and chlorhexidine 4% gel.

member or neighbour informs a community-based health volunteer (CBHV – who are often also TBAs) who collects the drugs from the drug keeper and brings them to the woman's home for use, administering the Misoprostol immediately following birth.

Each drug keeper received the drugs using a similar bin system to that of the health facility. They received 30 doses of Misoprostol (2 bins for Misoprostol with 15 doses in each bin) and 30 tubes of Chlorhexidine (2 bins for Chlorhexidine with 15 doses in each bin). The use of bins aided in monitoring the drug stocks as done at the health facility.

### ***Monitoring distribution and re-supply of Misoprostol and Chlorhexidine***

To assure adequate stock of the drugs and that Misoprostol and Chlorhexidine were used solely for the purposes intended, a detailed monitoring system was developed. Upon

collection of the drugs, the CBHVs provided drug keepers with the client's name, family name, address and community. This information is recorded in a Dispensing Register, including the date for each dose dispensed. The Dispensing Register is carbon copied: the drug keeper maintains the original copy; the health facility maintains one carbon copy for their files and the other they put into their bins. When one of the drug bins is empty, the drug keeper brings the bin, along with the Dispensing Register(s), to the health facility for resupply. When the first health facility drug bin is empty for either drug, all of the Dispensing Registers from the different drug keepers and the facility itself are returned to the state store for resupply. The pharmacist must review the total number of doses administered on the Dispensing Registers to ensure they match the number of doses issued. The pharmacist then uses the information to determine the resupply and completes an Issue Form that both the health facility and pharmacist maintain.

Government maternal child health coordinators responsible for all MCH activities at the LGA level are responsible for supervising commodity use and distribution in their respective LGAs. They also complete an Issue Form to record quantities used and supplied to them. TSHIP Service Improvement Facilitators (SIF) are responsible for monitoring commodity use and documentation, including providing on-the-job training regarding commodity management of Misoprostol and Chlorhexidine to the facility service providers.

### ***Training of service providers and drug keepers***

Working in partnership with the USAID/DELIVER Project, USAID/TSHIP facilitated two one-day training of trainers (ToT) workshops with state trainers ( $n = 12$ ) and MCH coordinators ( $n = 23$ ) to ensure the state and LGAs had adequately trained staff to provide technical assistance to health facilities, drug keepers and CBHVs.

The training content included the following core topics: situation of maternal and newborn health in Sokoto State; overview of Misoprostol and Chlorhexidine – including their utility in saving lives of mothers and new-borns, correct usage, possible side effects and eligibility criteria for using the drugs during home births; roles and responsibilities of and key messages for service providers, Drug Keepers, CBHVs, WDCs and community members; commodity logistics system overview; Misoprostol and Chlorhexidine distribution standard operating procedures; data management; and stock out prevention strategies.

The training for CBHVs was a part of the broader six-day training on maternal and child health issues and included the following topics: counselling skills, use of Misoprostol immediately after delivery at home, and cord care and application of Chlorhexidine. By June 2013, trainings for 244 service providers, 1220 drug keepers and 2440 CBHVs in all 23 LGAs and 244 wards were completed.

### ***Case study***

After anecdotal reports of success, USAID/TSHIP conducted a case study in September 2013 to identify promising practices and lessons learned on the community-based Misoprostol and Chlorhexidine distribution model and intervention to guide other state governments to design and implement similar interventions. Key informant interviews (KIIs) and focus group discussions (FGDs) were conducted with a broad group of stakeholders.

The case study aimed to document the perceived successes and benefits of using Misoprostol and Chlorhexidine as reported by different types of key stakeholders; key factors that contributed to the success of the distribution model and Misoprostol and Chlorhexidine uptake; barriers to the community-based distribution and uptake of Misoprostol and Chlorhexidine; and key lessons learned that will be useful for others considering a community-based distribution programme for these two drugs.

## **Methods**

### **Study design**

We conducted a qualitative study in randomly selected communities in 13 of the 23 LGAs in Sokoto State where the Misoprostol and Chlorhexidine intervention was initially rolled out. Three LGAs were randomly selected from each of the three State senatorial zones for nine LGAs in total. In each LGA, three wards were randomly selected ( $n = 27$  wards). In each ward, simple random sampling was used to select three rural communities for a total of 81 rural communities to target selected individuals for FGDs and KIIs. A list of individuals eligible for participation was created together with the community leaders based on eligibility criteria. Community leaders then recruited participants based on their availability and willingness to participate in data collection.

### **Data collection**

Trained data collectors facilitated FGDs and KIIs in Hausa. Data collectors audio-taped all KIIs and FGDs which were then transcribed and translated into English. On average, KIIs lasted approximately 45 minutes. Interviews were conducted with 128 individuals from the following categories: mothers who gave birth in the last week and had used the drugs, drug keepers, the CBHV from each of the selected wards, health facility-based service providers, representatives from the MoLG, and TSHIP staff. Twenty-eight FGDs lasting 60–90 minutes were conducted (12 in each senatorial zone) with husbands of the women who had used the drugs ( $n = 7$ ), WDC members ( $n = 9$ ) and mothers who have given birth within the last 2–4 weeks and had used the drugs ( $n = 12$ ). [Table 1](#) presents the data collection participants, selection criteria and type of data collected.

### **Ethics**

The Sokoto State Health Research Ethics Committee and the Health Media Lab in Washington, DC reviewed and approved the study protocol. Data collectors obtained informed consent from all participants.

## **Findings**

Findings are organised into four main sections: perceived successes and benefits of the intervention; key factors leading to the success of the distribution model and drug uptake; challenges to the community-based distribution and uptake of Misoprostol and Chlorhexidine; and key lessons learned. Key barriers and facilitators presented reflect themes that emerged during data analysis, and not just the opinion of a single individual. Key themes presented are not weighted or presented in order of importance, as various respondent types commented on different aspects of the interventions. For example, the

**Table 1.** Case study data collection.

Data collection method	Participant	Selection criteria	Type of data collected
In-depth interviews	Mothers ( $N = 45$ )	Mothers 15–49 years who have given birth in the last week and had used the drugs were purposively selected by WDCs.	Mothers' perception and experience about the benefits of using Misoprostol and Chlorhexidine
	Drug keepers ( $n = 24$ )	3 of 5 drug keepers per WDC were selected (two high performers and one with the fewest drugs distributed).	Perception about the benefits and challenges of using Misoprostol and Chlorhexidine, as well as information regarding distribution and availability of the drugs
	CBHVs ( $n = 28$ )	Convenience sample based on drug keeper recommendations.	
	Service providers ( $n = 19$ )	Convenience sample	Distribution system of the drugs, barriers and facilitators for drug use and their experiences
	Representatives from the MoLG and TSHIP programme staff at the state level ( $N = 12$ )	Key informants most knowledgeable about the roll-out.	Design of the intervention as well as the process adopted to solicit for funding to purchase the drugs and distribute the drugs, state-level stakeholders expect to sustain the intervention
FGDs	Spouses of wives that used the drugs ( $n = 7$ )	Convenience sample	Perception about benefits of use of Misoprostol and Chlorhexidine, distribution system for the drug, access to the drug and information about the drug and community factors that influence use
	WDCs/community members ( $n = 9$ )		
	Mothers who have given birth within last 2–4 weeks and used the drugs ( $n = 12$ )		

state-level stakeholders could speak more directly about the importance of advocacy efforts than household beneficiaries.

### ***Perceived successes and benefits of the intervention***

Overall, those interviewed described the community-based Misoprostol and Chlorhexidine intervention as successful and reported overwhelming support for the use of the two drugs among users, their spouses and members of drug distribution system (i.e. CBHVs, drug keepers, service providers and WDCs). The intervention was so well received that the Sokoto State MOH included Chlorhexidine and Misoprostol in the procurement list for all health facilities providing maternity services.

The success of the intervention was largely due to the distribution system, but also the perceived benefits of both drugs. Programme staff described their perspectives on lives saved thus far:

Ultimately it's the number of lives saved from death from bleeding and infection. This will be calculated in due time. But from our estimation of available data [the medications] would have saved the life of 40–50 women who would have died from PPH and 200 new-borns from cord sepsis. (TSHIP Programme Manager)



### **Misoprostol**

According to a TSHIP programme manager, community members describe Misoprostol as a ‘magic drug’ given its ability to reduce the amount of blood loss during delivery. Those interviewed described how Misoprostol has resulted in less bleeding than previous deliveries when they used non-effective and non-medical remedies such as sugar, herbs and/or saltwater solution:

The length of time it took for me to stop bleeding has drastically reduced during my last delivery compared to my previous experience ... It took me a week this time [compared to] 40 days in previous time. (Female Respondent)

I know they [Misoprostol drugs] are beneficial to women since we used them when my wife delivered. In the past, when the drugs were not being used, whenever she delivered, she suffered from bleeding ... but this time around, a neighbour - a medical staff member, informed us of the availability and use of the drugs, we found them beneficial. (Husband of Misoprostol User)

Drug keepers also noted the effectiveness of Misoprostol and how it helped women stop bleeding:

All they have seen is progress. There was a woman that delivered at night and the officer in charge of the hospital wasn't around, so I asked the CBHV to go and give her this medicine; the three tablets; and she was okay. Whoever came in the morning found her doing her normal chores. Previously it took her three days to be up and going again, so she was even asking for more of the drug. (Drug Keeper)

Service providers also lauded use of Misoprostol to prevent PPH. One service provider described how it has helped a woman in the facility's catchment area:

Don't you see how [when] they were bringing us a bleeder, she died as a result? So now, the amount of women dying from bleeding has reduced because the subsequent introduction of such medicine prevented the problems from happening again. (Service Provider)

Another service provider described how Misoprostol's efficacy in treating women with PPH on the spot confers the indirect benefit of avoiding a trip to a health facility, which can be life-threatening for women in locations with poor infrastructure and far distances from facilities:

... due to bad roads, even attempting to bring women in labour to the hospital ends up tragic. It really a blessing coming up with this initiative by the government and TSHIP. (Service Provider)

### **Chlorhexidine**

Respondents reported that Chlorhexidine was effective in reducing cord infections and swelling around the cord. Further, the respondents reported that the umbilical cord falls off faster after using Chlorhexidine compared to when after using traditional practices such as ‘hot compress warming’, herbs, ‘date powder’, cow dung and toothpastes such as Maclean and Ampax.

In the past, there were situations when baby's umbilicus takes time to heal, but with this medicine, nobody reported any problem after use. (WDC Member)

The emergence of these medicines brought a lot of remedies ... this ointment prevents a lot of infections that occur after cutting the baby's umbilical cord. (WDC Member)



### ***Key factors leading to the success of the distribution model and drug uptake***

Stakeholders indicated that key factors to the successful establishment of a distribution system for Misoprostol and Chlorhexidine and their widespread acceptance and use include: advocating early on with state-level agencies; engaging the community early on about the value of the medications; the broad stakeholder engagement/involvement in designing the distribution system; and concerted efforts to ensure availability of the drugs to meet demand.

#### ***Advocacy at the state level***

State-wide advocacy efforts helped ensure the intervention was designed collaboratively with key stakeholders. Also, the advocacy approach led to the development of individual champions within and development of institutional collaborators at the federal and state Ministries of Health, MoLG, MoWASD, hospital management board, National Agency for Food and Drug Administration and Control, and the USAID/DELIVER project:

MoLG purchased drugs while monitoring is [a] collaboration by MoLG, MoH SPHC and the community through WDCs and TSHIP. It's team work. (TSHIP Programme Manager)

#### ***Community engagement***

Early introduction of the intervention to the community members and their engagement during programme preparation stages contributed to the intervention's acceptance and adoption.

What we did when we were informed about the programme was to enlighten the public even before the medicine was supplied. The people were well informed about it. (WDC Member)

In addition to engaging WDC members, the programme also engaged approximately two village heads and/or religious leaders per ward in drug promotion and community mobilisation. These community leaders are viewed as influential sources of information by women and their spouses, and also help counter myths regarding health interventions. Other individuals in the community who were involved in promoting immunisation against Polio, uptake of which is also a challenge in northern Nigeria due to mistrust, became involved in these community mobilisation efforts. Community gatherings, such as weddings and naming ceremonies, were used as opportunities to inform community members about the two drugs and promote their use. Religious leaders used periods immediately after daily worship sessions to educate people about the drugs:

Since this is a village, the people troop to the mosques from all the nooks and crannies of the district. Dinawa district has 25 village heads, each of whom has a representative, once they are informed or enlightened, they will, in turn, inform the people under their domains. (WDC Member)

#### ***The community-based distribution model***

The case study findings indicated that the distribution of Misoprostol and Chlorhexidine is deeply entrenched within and dependent on communities participating in the intervention. Government at the state and ward levels, as well as programme managers reported that the community-derived design and community-based implementation of the

intervention contributed to its successes, as this ensured the intervention fit within the socio-cultural and structural context as well as within the fragile health delivery system of Sokoto State.

Using male drug keepers to store the drugs in the community and administer and monitor the drugs significantly contributed to securing men's support. Drug keepers inform community members about the drugs and their use, mobilise families or CBHVs to obtain the drugs, supervise drug distribution and encourage women who have used the drugs to promote use among other women. WDC members also reported organising meetings for men at schools, and meetings for women in the hospitals and at their homes.

Further, packaging Misoprostol in three tablet doses was essential in assuring the community and religious leaders that the drug is being used to prevent PPH and not used to facilitate abortion in the first trimester (which requires a dose of 800 mcg by four 200 mcg tablets) (Faundes, Fiala, Tang, & Velasco, 2007). After conducting specific advocacy and education outreach towards men through imams, WDC members reported that men were clearly recognising the benefits of the drugs and are picking them up from CBHVs for their pregnant wives:

We have not seen anything wrong with the drug, we have used it and we have seen its importance and we believe in it. (Husband of Misoprostol User)

There was consensus among respondents that CBHVs are an important component of the community-based platform for distributing the drugs. Besides being present during birth delivery, CBHVs conduct house-to-house education activities informing women about child health, general sanitation, oral rehydration therapy, antenatal care and other health issues. CBHVs' extensive interactions with pregnant and post-partum mothers has resulted in women trusting them with respect to distribution of drugs. In addition, CBHVs are in clients' homes during delivery and have an opportunity to educate women and their spouses about the drugs at that time, and to a greater extent oversee the proper use of the drugs:

The best way [to distribute] is through CBHV because she is the one who cuts off the umbilical cord, she could advise the women to inform her husband about the drugs that are taken after delivery, if he consents to it, she takes them otherwise the CBHV could talk try to convince him. (Husband of New Mother)

### *Ensuring drugs are accessible and available*

The drug monitoring and re-supply system was designed and operationalised with the aim of ensuring drugs are available when needed. Health facility staff hold monthly meetings to review data on drug utilisation and stock to measure performance and help anticipate future demand. Drug keepers described the utility of the two-container system in monitoring the drug supply and reviewing the Drug Distribution forms during group meeting with drug keepers:

In each and every end of the month we normally gather drug keepers for a review meeting, from them we will hear who has and does not have [drugs], then we add more [to those without stock]. (Service Provider)

As directed, the system is designed so that service providers periodically check the drug bins of every drug keeper to ensure that when one container is empty, the re-supply has been issued.

## ***Challenges to the community-based distribution and uptake of Misoprostol and Chlorhexidine***

Despite the overall success in uptake of both drugs, some challenges to accessing and utilising the drugs still remain, including stock outs, shortage of staff and socio-cultural barriers such as the inability of women to make decisions and pervasive myths/fears of medication generally.

### ***Drug stock outs***

Most service providers and drug keepers reported maintaining a steady supply of Misoprostol and Chlorhexidine; however, a few WDC members, drug keepers and service providers reported drug stock outs as a problem and that CBHVs experience challenges maintaining an adequate supply of drugs to meet demand. One of the factors that may have contributed to stock outs was that the MOLG decided to give equal amounts of drugs to all LGAs regardless of their perceived demand and need. The process for obtaining new stock varied, with drugs refreshed without requests in some cases, and in others requests went unfulfilled.

### ***Human resources***

Programme staff interviewed described challenges in recruiting an adequate number of CBHVs and drug keepers, particularly for large geographic regions with hard-to-reach communities. Finding drug keepers who could read, write and complete the demanding duties of their role was also challenging. A respondent explains:

One major challenge is the limited number of drug keepers and CBHVs, so accessibility is limited... beyond that, [another challenge] is recording of the commodities – there is delay in restocking and poor documentation and mismanagement of the drugs and some laziness among drug keepers. (Programme Manager)

Drug keepers reported that when they travel to collect drugs from health facilities or to deliver drugs to CBHVs, they spend their own money to cover transportation expenses. Similarly, CBHVs use their own funds to travel to women's homes. Both service providers and drug keepers suggested providing incentives or transportation allowance to motivate those incurring costs. A service provider explains:

There is one major challenge; settlements in the ward are scattered and difficult to reach. The drug keeper takes long before he reaches the facility. My advice is that the drug keepers that are from hard to reach places be given some allowances for transportation. (Service Provider)

The drug distribution system appeared to be implemented differently in some communities. For example, in a few cases, village heads were keeping drugs instead of the drug keepers. In other cases, drug keepers provided drugs directly to women instead of through the CBHVs. There were also instances reported where CHBVs carried a supply of drugs with them; whereas other only requested drugs from drug keepers as needed.

### ***Socio-cultural factors***

Socio-cultural barriers were raised by all types of interview respondents. Similar to other medications/prophylactics, at the start of the intervention, some community members were suspicious of Misoprostol and Chlorhexidine and feared side effects or

complications. In general, according to WDC members, the ‘attitude of the people is to reject the medicine’ or they adopt a fatalistic attitude saying they trust in God [to take care of them]. Respondents noted that attempts to dispel such myths varied – in some instances, women were given drugs by CBHVs with no explanation; in others, information about the drugs was provided. Men’s overwhelming influence on decisions related to women also serves as a barrier to uptake, resulting in women refusing to take the medication because their husbands oppose it. While efforts were made to address men’s concerns so they would support the drugs, in some cases, husbands still rejected them.

Many respondents welcomed the fact that the drugs are free, but some indicated that this may arouse suspicions about why women are being offered something that they haven’t asked for. Others believe that if it is offered free of charge, it must be ineffective:

... you know some people are doubtful that since the drug is for free, which is unlike any other good drug, there must be an evil motive. (Misoprostol User)

With respect to Chlorhexidine, one of the greatest challenges is that women do not want to apply the ointment to the cord right after delivery. Instead, they prefer to give a bath to their child first, which could undermine the effectiveness of the medication:

Our problem with them is on bathing the baby; they insist on doing it, saying that the baby does not smell good. We thus allow them to bathe the baby but tell them to apply the ointment immediately after, and not to bathe the baby again until the following day to which they comply. (Drug Keeper)

### ***Key lessons learned***

While advocacy efforts were successful and communities are generally supportive of the community-based distribution system of Misoprostol and Chlorhexidine, respondents from government, drug distribution players and programme managers offered several important lessons for those continuing these efforts or considering adopting them in new geographic areas.

#### ***Maintain a continuous supply of drugs***

For Sokoto State where the intervention is considered a success, ensuring availability of drugs is critical to maintaining momentum of its acceptance. As respondents indicated, if the drugs are unavailable, it could lead to additional mistrust of health-related interventions. A drug keeper explains:

... people have already been oriented with the medicine; It is not possible to tell them it finished when they come looking for it, [it] may seem they are just being toyed with.

#### ***Enhance counselling and mobilisation efforts***

As evidenced in this case study, fears of side effects and mistrust regarding the use of these drugs (and new medicines in general) existed in some communities despite efforts to sensitise communities. Respondents noted the potential benefits of engaging women and their spouses who have had successful experiences with the drugs in community mobilisation efforts. While many communities already do this, standardising the approach across

wards could enhance impact. One husband described how people like himself could be involved in such efforts:

You know if people are ignorant of something they don't trust it but when they see that someone used it and it worked they also use it, at first many people they did not believe in the drugs but now they have seen how important it is, we need more of it'. (Husband of Misoprostol User)

### ***Consider ways to sustain the community-based distribution system***

The current distribution system requires drug keepers and CBHVs to use their own money to cover transportation expenses to collect and deliver the drugs. In some instances, CBHVs or drug keepers give each other small cash incentives, but this is not a standardised practice. Time- and expense-related challenges are particularly severe for drug keepers who must travel long distances to reach the health facility in remote communities. Respondents noted the importance of addressing these issues to ensure the current system can be sustained.

## **Recommendations**

We provide the following recommendations for other programmes implementing a community-based distribution system:

- Develop a clear process for procurement and documentation to ensure supply matches demand, as well as maintaining a robust M&E system for drug distribution. Distribution based on demand should be prioritised over equal distribution across wards.
- Create standard messaging on the importance of Misoprostol and Chlorhexidine for CBHVs to use with women *prior* to delivery to ensure women are adequately informed of the benefits of the drugs in advance.
- Enhance supportive supervision visits to ensure health education and referral guidelines are followed, as well as reviewing processes for documentation of stock and distribution. Programmes should ensure that responsibilities of project staff such as the Service Improvement Facilitators are fully transferred to facility service providers.
- In communities that require drug keepers or CBHVs to travel great distances to acquire the drugs, consider solutions (e.g. stipend, reimbursement and increase supply) that will alleviate their out of pocket costs for travel.
- Consider distributing drugs directly to women in advance of delivery as has been successfully documented elsewhere. (Ejembi et al., 2014; Geller et al., 2013)
- Report lessons learned back to key decision makers involved in programme institutionalisation. In the case of Sokoto state, WDCs, LGAs and State Assembly representatives played a key role in the intervention, as such deliberate feedback such as outcome data and personal testimonies of beneficiaries could be shared through town hall meetings. This approach will help maintain trust between communities and their governments. It will also help strengthen the governance dimension in sustaining programmes.
- Given the presence and central role of CBHVs during birth, the government should consider exploring ways of leveraging the community-based distribution of drugs to promote other vital MCH interventions such as early and correct initiation of breastfeeding, the promotion of exclusive breastfeeding and early postnatal care.

## Conclusion

Community-based distribution of Misoprostol and Chlorhexidine in Sokoto State had initial successes, with government, health facility providers, drug keepers, CBHVs, and women and their spouses accepting of both drugs. The success was due to many factors, including advocacy efforts, designing a distribution system sensitive to the socio-cultural environment and ensuring drug accessibility. To maximise and sustain the effectiveness of such interventions, the state government actors will need to maintain systems that ensure constant drug supply and adequate human resources at the community level, as well as ensuring effective quality improvement strategies are in place.

## Limitations

All wards were randomly selected, however, the convenience sampling approaches used to identify individuals for interviews (e.g. spouses, women) and some of the FGDs (i.e. with drug keepers) could have introduced selection bias, as such findings may not have been representative of the study population. In addition, the study relied heavily on self-reported data which may have been biased. To address this study design challenge, we collected data from a wide variety of individuals and triangulated responses.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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