



## Community Based Advance Distribution of Misoprostol as a Measure to Prevent Maternal Deaths Due to Post-Partum Hemorrhage

Gunjan Taneja<sup>1</sup>, Rajeev Gera<sup>2</sup>, Devina Bajpayee<sup>3</sup>, Satish Sarosha<sup>4</sup>

<sup>1</sup>State Technical Team Lead-RMNCH+A, IPE Global, Ranchi, India

<sup>2</sup>Project Director-RMNCH+A, IPE Global, New Delhi, India

<sup>3</sup>IPE Global, New Delhi, India

<sup>4</sup>Department of Community Medicine, MGM Medical College, Indore, India

Corresponding Author: Gunjan Taneja

Received: 05/07/2015

Revised: 21/07/2015

Accepted: 28/07/2015

### ABSTRACT

Maternal mortality is one of the core markers of the functioning of the public health care delivery system. Considerable progress has been made over the years and Maternal Mortality Ratio (MMR) dropped worldwide by 45 percent between 1990 and 2013. India has also registered a consistent and regular decline with the current MMR of 167 (2011-13) reflecting an appreciable decrease from 398 in 1997-98. In spite of this, still almost 300,000 women died in 2013 from causes related to pregnancy and childbirth with Sub-Saharan Africa and Southern Asia contributing to 62% and 24% of maternal deaths respectively. India alone accounts for close to 50,000 maternal deaths every year.

A recent review of maternal deaths worldwide concluded that between 2003 to 2009 haemorrhage was the leading direct cause, representing 27.1% of maternal deaths with more than two thirds of reported haemorrhage deaths being classified as postpartum haemorrhage (PPH). The same is true for India where haemorrhage accounts for 40% maternal deaths with PPH being the major contributor. In order to prevent maternal deaths due to PPH, World Health Organization (WHO) recommends the use of uterotonics as the main intervention within the active management of third stage of labour package with oxytocin being the drug of choice. The guidelines also recommend the use of misoprostol for the prevention of PPH by community health care workers and lay health workers in settings where skilled birth attendants are not present. In the light of this scientific evidence Government of India (GOI) has now undertaken the policy decision to permit Accredited Social Health Activists (ASHAs) to undertake advance distribution of misoprostol to pregnant women who are likely to deliver at home to prevent PPH. The current article provides a review of the new policy and also identifies key steps to be undertaken for effective implementation of the strategy.

**Keywords:** Maternal mortality, Misoprostol, Postpartum hemorrhage (PPH), uterotonics, Accredited Social Health Activists (ASHAs)

### INTRODUCTION

Maternal mortality remains a key concern across the globe with maternal deaths being a core marker of the functioning of the public health care

delivery system. The Millennium Development Goals (MDGs) very well recognize this fact and MDG 5 speaks about improving maternal health, with Target 5.A aiming to reduce global Maternal Mortality

Ratio (MMR) by three quarters between 1990-2015. <sup>(1)</sup> The 2014 MDG report states that “Much more needs to be done to reduce maternal mortality” and that though MMR dropped worldwide by 45 percent between 1990 and 2013, from 380 to 210 deaths per 100,000 live births, still almost 300,000 women died in 2013 from causes related to pregnancy and childbirth with Sub-Saharan Africa and Southern Asia contributing to 62% and 24% of maternal deaths respectively. In addition, MMR in developing regions stands at 230 in 2013 which was fourteen times higher than that of developed regions, which recorded only 16 maternal deaths per 100,000 live births in the same year. <sup>(2)</sup>

In accordance with the global trend, India has shown a consistent and regular decline in MMR over the last 15 years. The current MMR in India is 167 (2011-13), reflecting an appreciable decrease from 398 in 1997-98. <sup>(3,4)</sup> However wide inter-region variations do exist (Figure 1) with the Empowered Action Group (EAG) states still continuing to report higher rates as compared to the National average.

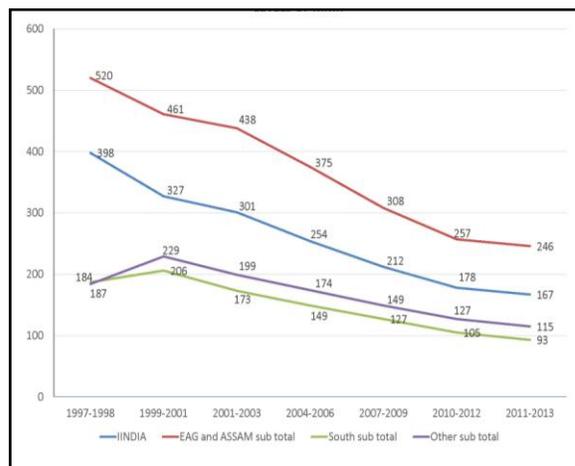


Figure 1: Levels of Maternal Mortality Ratio (MMR) by regions, 1997-2013

Disaggregation of the data further brings out the disparities and variations between and within the states as is clearly evident from Annual Health Survey (AHS) data. (Table 1 and 2). <sup>(5)</sup>

Table 1: MMR in AHS states and rate of decline

State	AHS 10-11	AHS 12-13	% decline
Assam	381	301	20.99
Bihar	305	274	10.16
Chhattisgarh	275	244	11.27
Jharkhand	278	245	11.87
Madhya Pradesh	310	227	26.77
Odisha	277	230	16.97
Rajasthan	331	208	37.16
Uttar Pradesh	345	258	25.21
Uttarakhand	188	165	12.23

Table 2: MMR variability in AHS states (2012-13)

State	MMR	Dist. Below State Avg.	Dist. Above State Avg.	Range	
				Min	Max
Assam	301	18	5	251	404
Bihar	274	21	16	221	349
Chattisgarh	244	6	10	211	272
Jharkhand	245	9	9	182	302
Madhya Pradesh	227	27	18	164	361
Odisha	230	10	20	218	245
Rajasthan	208	14	17	152	265
Uttar Pradesh	258	33	17	151	364
Uttarakhand	165	8	6	158	182

A possible reason for the disproportionate high maternal deaths in developing and under-developed countries lies in the access to and utilization of health services. Globally it is estimated that nearly half of all births (46%) still occur outside an institutional setting, attended by a traditional birth attendant (TBA), a relative, or no one. <sup>(6,7)</sup> In the areas where institutional deliveries are not possible it is envisaged that

Auxiliary Nurse Midwives (ANMs) will provide quality intra and immediate post-partum care to the women and their newborns. However data reflects that most home deliveries are not attended by a Skilled Birth Attendant (SBA) because invariably low resource settings with high MMRs have low ratios of SBAs to women and progress in this regard has remained slow. <sup>(8)</sup>

Strategic interventions aimed at reducing maternal mortality and morbidity has been undertaken in India since the launch of the National Rural Health Mission (NRHM), to address access and utilization issues. Notable among these have been the implementation of the Janani Suraksha Yojna (JSY) and Janani Shishu Suraksha Karyakram (JSSK) schemes with the aim of improving the institutional delivery rates and minimizing Out of Pocket expenditures for the beneficiaries specially those belonging to the marginalized population groups. If MMR data is segregated for before and after NHM periods then while the average rate of decline for MMR was 4.0% from 1997-2006 it increased to 4.9% from 2006-2013. <sup>(3,4)</sup> However it is evident that states with low institutional delivery rates have (Figure 2) had lower rates of reduction in MMR over the recent years, <sup>(5)</sup> thus very well elaborating the fact that still a lot needs to be done to achieve MDG targets in the country.

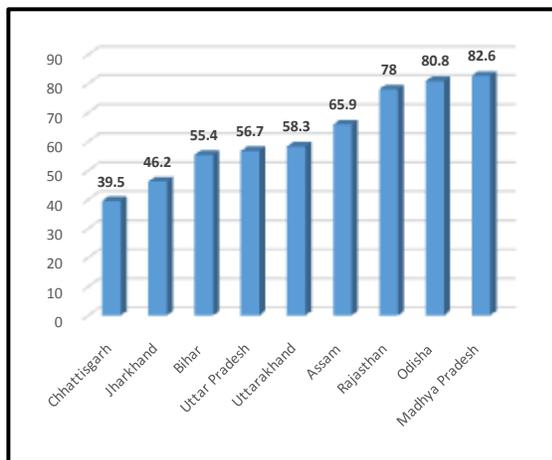


Figure 2: Institutional delivery rates (AHS 2012-13)

As far as etiology of maternal deaths is concerned, a recent review of maternal deaths worldwide concluded that between 2003 to 2009 hemorrhage was the leading direct cause, representing 27.1% (19.9-36.2) of maternal deaths with more than two thirds of reported hemorrhage deaths being

classified as postpartum hemorrhage (PPH). <sup>(9)</sup> The same is true for India where hemorrhage accounts for 40% maternal deaths with PPH being the major contributor. <sup>(10)</sup> This is compounded by the fact that PPH poses a significant public health challenge in low-resource settings because of its low predictability <sup>(11)</sup> and the speed at which it kills; without intervention, 88% of women die of postpartum hemorrhage within four hours of delivery. <sup>(12)</sup> It is also a well-established fact that women who deliver at home without assistance are at the maximum risk of dying from PPH.

In this context to prevent maternal deaths due to PPH, the World Health Organization (WHO) recommends the use of uterotonics as the main intervention within the active management of third stage of labour package with oxytocin being the drug of choice. In addition, the use of misoprostol for the prevention of PPH by community health care workers and lay health workers is recommended in settings where skilled birth attendants are not present. <sup>(13)</sup> In the light of this scientific evidence Government of India (GOI) has now undertaken the policy decision to permit Accredited Social Health Activists (ASHAs) to undertake advance distribution of misoprostol to pregnant women who are likely to deliver at home to prevent PPH. This is a marked shift from the initial decision of only allowing Auxiliary Nurse Midwives (ANMs) to administer misoprostol during home deliveries and is supported by global evidence on the effectiveness, feasibility and safety of advance distribution of misoprostol to pregnant women to prevent PPH. <sup>(14-16)</sup> Specifically positive results from other low resource setting countries like Bangladesh, Nepal and Zambia which have implemented and scaled up misoprostol for prevention of PPH have been instrumental for Government of India in moving forward

with implementing this intervention in the country. <sup>(17)</sup>

### **The Policy:**

GOI guidelines clearly advocate the conditions in which misoprostol is to be used in the country, <sup>(10)</sup> with the use of misoprostol being recommended in only those exceptional situations where a pregnant woman is not likely to access a health facility for delivery. In addition, misoprostol is to be used for self-administration or administered by Accredited Social Health Activists (ASHAs) for women who intended to deliver at institutions but delivered at home and women who delivered in transit to the health facility. The guidelines also state the criteria to help identify women who are likely to deliver at home. These include women with a past history of one or more deliveries in the household, families where women customarily deliver at home due to social/religious/cultural/economic reasons, if the number of Ante-Natal Care (ANC) visits are less than 2 by the end of 6<sup>th</sup> month of pregnancy, women with no other care giver at home, women with disabled children or from families with no support from an adult and women who due to their location of their homes are likely to deliver at homes: remote villages / hamlets without motorable road connectivity, villages on hilltops, areas which are cut off from mainland and snow bound, waterlogged areas and villages which are cut-off for more than one month in a year.

Based on these guidelines, the following areas have been identified for advance community based distribution of misoprostol by ANMs and ASHAs:

- All districts of the High Focus states of Bihar, Uttar Pradesh, Madhya Pradesh, Jharkhand, Uttarakhand, Rajasthan, Chhattisgarh, Orissa, Assam, Himachal Pradesh, Jammu and Kashmir where home delivery rates are more than 20%.

- All 184 High Priority Districts (HPDs)
- Hilly and Tribal districts
- Based on the experience of implementation of the intervention allowing community based distribution of misoprostol in the high focus districts / priority districts, the intervention can be scaled up to all those districts of other states in the country where home deliveries are more than 20%.
- In districts where institutional delivery rate is more than 80% (i.e home delivery rate is less than 20%) states can identify additional blocks / areas which are hard to reach, remote or inaccessible throughout the year or for some parts of the year due to snow, floods, water logging etc for implementation of the strategy.

### **The Drug:**

Misoprostol is a prostaglandin E1 analogue and has been used orally to prevent and treat gastro duodenal damage induced by non-steroidal anti-inflammatory drugs (NSAIDs) in the past. In addition misoprostol is used for a variety of indications in the practice of obstetrics and gynecology, including medical abortion, medical management of miscarriage, induction of labor, cervical ripening before surgical procedures, and the treatment of postpartum hemorrhage. <sup>(18)</sup>

Though scientific evidence clearly advocates for use of oxytocin as the drug of choice for prevention of PPH, the use of misoprostol is recommended in settings where oxytocin is unavailable or its use is not feasible as per guidelines. This is so because administration of oxytocin, requires the assistance of a skilled birth attendant (SBA), and therefore is not available to women experiencing unattended home births, either by choice, lack of access to SBAs <sup>(8,19)</sup> or due to gender and wealth disparities. <sup>(20)</sup> In this context misoprostol

has become a pillar of comprehensive PPH prevention because it is cost-effective and, unlike oxytocin, does not require a cold chain or a skilled provider to administer it. These characteristics make it a valuable addition in the home-to-hospital continuum of care, providing the ability to prevent PPH regardless of place of birth. <sup>(21)</sup> In view of the above facts, misoprostol was added to the WHO List of Essential Medicines for the prevention of PPH in 2011 and is now registered in more than 30 countries specifically for the indication of PPH. <sup>(21)</sup>

Various studies conducted in the past have agreed upon an oral dose of 600 micrograms of misoprostol for prevention of PPH <sup>(22,23)</sup> and the same is advocated by WHO. Keeping in line with available evidence GOI advocates for the same dosage and three tablets of 200 micrograms each to be consumed by the women orally within one minute or soon after delivery of the baby and before the placenta comes out, which minimizes the risk of bleeding the most. In addition the guidelines state that the

drug is to be consumed even if the placenta has come out soon after the birth of the baby. <sup>(10)</sup> Global guidelines do advocate for consumption of misoprostol within 2 hours of birth, if not consumed as soon as possible after birth to minimize chances of PPH. <sup>(21)</sup>

Overall the drug has been found to be extremely safe and only minor side effects have been reported with its use which includes fever with chills and rigors, nausea/vomiting, abdominal cramps, diarrhea, constipation and headache. A 2013 Cochrane review by Hofmeyr et al. found no statistically significant difference in maternal death or severe morbidity for misoprostol compared to other uterotonics for the prevention or treatment of PPH. <sup>(24)</sup>

### The Distribution Process:

Misoprostol can be distributed to women during pregnancy to ensure that they have an uterotonic at hand. The drug is advocated for use at home, on road or at the facility as reflected in the Figure 3 <sup>(21)</sup>

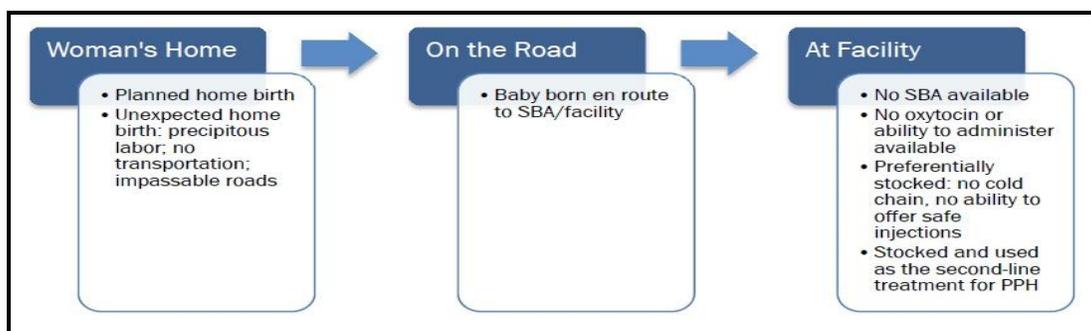


Figure 3: Use of misoprostol along the continuum of care

RATE	DISTRIBUTION TIMING				DISTRIBUTING CADRE			ADMINISTRATION METHOD		
	ANC		Home visit (Late pregnancy)	At home birth	CHW	TBA	Health worker/ANC provider	Self	TBA	SBA or semi-skilled health worker
	Any visit	Late visit								
Distribution rate	22.5-49.1%	21.0-26.7%	54.5-96.6%	22.5-83.6%	54.5-96.6%	25.9-86.5%	21.0-49.1%	21.0-96.6%	25.9-86.5%	22.5%
Coverage rate	16.8-65.9%	16.2-35.9%	55.7-93.8%	16.8-73.5%	87.9-93.8%	35.9-73.5%	16.2-65.9%	16.2-93.8%	35.9-73.5%	16.8%

Figure 4: Distribution and coverage rates by distribution timing, cadre, and administration method among PPH prevention program using misoprostol

An integrative review in 2013, evaluated community distribution of misoprostol in terms of time of distribution, cadre used for distribution and the method of administration. (Figure 4)

The review concluded that distribution of misoprostol by undertaking home visits during late pregnancy or at the time of births by community workers and self-administered or administered by TBA (Traditional Birth Attendant), achieved the best distribution and coverage rates. In addition programs that had an inbuilt component of counseling further potentiated results. Hence, GOI advocates for advance distribution of misoprostol through home visits by the ANMs and ASHAs to pregnant women during the 8<sup>th</sup> month of pregnancy. Also women who have been provided misoprostol should be counseled by the ANMs and ASHAs at least twice at a week's interval on self-administration. In addition a female family member should also be

counseled and given appropriate instructions for administration of the tablet. (10)

Inadvertent use of misoprostol during pregnancy or before delivery has been associated with the risk of partial or complete abortions, pre-term labour and rupture uterus. However reviews conducted till date have demonstrated extremely low rates of mistimed administration with the advance distribution of misoprostol for prevention of PPH. (14) In addition, GOI guidelines state that all pregnancies for which misoprostol is to be distributed should have multiple pregnancies ruled out to avoid complications.

#### **Implementation of the strategy:**

A product in this case misoprostol, needs to pass through various steps to reach the end user. Effective implementation would require each step to be closely studied to identify the challenges adversely impacting the service delivery mechanisms. Figure 5 outlines the implementation channel. (21)

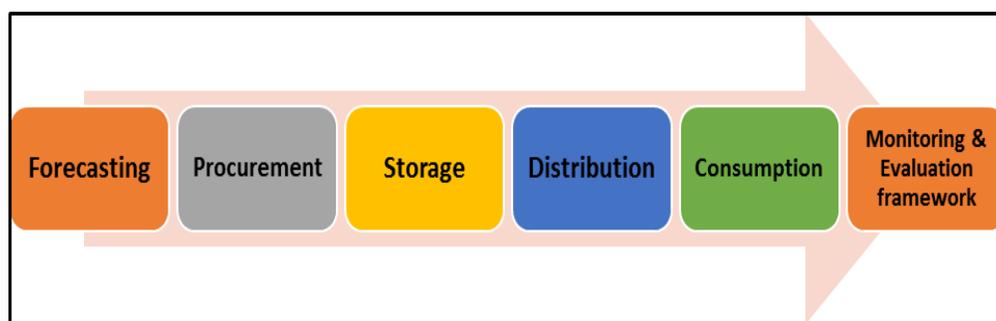


Figure 5: Implementation process for advance distribution of misoprostol

#### **Forecasting and Procurement:**

The first and foremost step in ensuring the effective implementation of any public health intervention depends upon ensuring the availability of the commodity to the end user. Being a new initiative, it would be imperative to ensure smooth procurement of misoprostol to facilitate the service delivery mechanism. Forecasting of

the drug required remains an integral component of the procurement process. For smooth implementation of the strategy it is imperative that dose calculation is completed well in advance at both state and district levels. Table 3 provides an estimate of the doses required in the state of Jharkhand for implementation of the strategy.

**Table 3: Misoprostol dose requirement (illustrative example for Jharkhand) (HMIS data as on 6<sup>th</sup> October 2014)**

District	Expected Deliveries (2013-14)	Reported Institutional Deliveries (2013-14)	Reported Home Deliveries (2013-14)	% Home deliveries	Total Reported Deliveries (2013-14)	Unreported Deliveries (2013-14)	Total Deliveries requiring Misoprostol (Assuming unreported deliveries as home deliveries)	% of deliveries requiring Misoprostol
Bokaro	51300	26,408	6,738	20.3	33,146	18,154	24,892	48.52%
Chatra	26100	11,895	5,364	31.1	17,259	8,841	14,205	54.42%
Deoghar	35100	27,298	3,976	12.7	31,274	3,826	7,802	22.23%
Dhanbad	68400	33,579	7,841	18.9	41,420	26,980	34,821	50.90%
Dumka	36000	19,451	9,382	32.5	28,833	7,167	16,549	45.96%
Garhwa	33300	19,786	5,311	21.2	25,097	8,203	13,514	40.58%
Giridih	57600	34,369	16,137	32	50,506	7,094	23,231	40.33%
Godda**	32400	31,073	1,573	4.8	32,646	Nil	1,573	4.85%
Gumla	27900	16,039	3,957	19.8	19,996	7,904	11,861	42.51%
Hazaribagh	36900	29,543	10,134	25.5	39,677	Nil	10,134	27.46%
Jamtara	21600	11,512	3,996	25.8	15,508	6,092	10,088	46.70%
Khunti	13500	6,434	3,407	34.6	9,841	4,069	7,476	55.37%
Koderma*	17100	15,663	924	5.6	16,587	513	1,437	8.40%
Latehar	17100	11,693	6,294	35	17,987	Nil	6,294	36.80%
Lohardaga	13500	9,576	699	6.8	10,275	3,225	3,924	29.06%
Pakur	27900	13,831	8,108	37	21,939	5,961	14,069	50.43%
Palamu	45900	21,668	9,595	30.7	31,263	14,309	23,904	52.08%
Paschim Singhbhum	40500	23,230	8,361	26.5	31,591	8,909	17,270	42.64%
Purbi Singhbhum	50400	34,935	3,573	9.3	38,508	11,892	15,464	30.68%
Ramgarh	20700	11,377	4,144	26.7	15,521	5,179	9,323	45.03%
Ranchi	72000	46,909	7,555	13.9	54,464	17,536	25,091	34.85%
Sahibganj**	29700	28,518	3,867	11.9	32,385	Nil	3,867	13.03%
Saraikela	28800	13,137	6,064	31.6	19,201	9,599	15,663	54.38%
Simdega	16200	6,967	4,159	37.4	11,126	5,074	9,233	56.99%
Jharkhand	819900	504,891	141,159	21.8	646,050	180,527	320,248	

\*Not considered for calculation as estimated home deliveries are less than 20%

\*\*Considered for calculation in spite of home delivery rates <20% as both are HPD

Total Deliveries requiring Misoprostol = 3,20,248

Number of 200 microgram tablets required = 3,20,248\*3 = 9,60,744

Overall a smooth procurement process will help the states in effective implementation. To streamline the procurement mechanism the following considerations must be taken into account:

- The National List of Essential Medicines (NLEM) approves misoprostol for use at Tertiary level facilities in 100 microgram strength. <sup>(25)</sup> Hence at the National level a key action points include updating the NLEM to approve use of misoprostol at all levels and in strengths of 200 microgram.
- Inclusion of misoprostol in the State List of Essential Medicines: Most of the states adopt the NLEM and hence misoprostol gets automatically included in the State list. If the State has a separate list then advocacy should be undertaken to facilitate its inclusion in the State list. Inclusion in the list of

essential medicines results in ensuring the availability of the medicine at affordable costs with ensured quality and promotes rational use of the medicine taking into account cost, safety and efficacy. <sup>(25)</sup>

- Procurement policy: Having a procurement policy helps the states in streamlining purchase through a set of guidelines.
- Packaging: Normally medicines are available in packs of 5 or 10. In this case 3 tablets of misoprostol need to be packed together. Hence the procurement guidelines should explicitly state the same or secondary packaging needs to be undertaken during the course of distribution of the drug. Misoprostol is also available as a single tablet of 600 micrograms which can be advocated for use to make the packaging system easy.

Ideally all packages of misoprostol should have a code which can help the tracking of the same.

### **Storage and Distribution:**

The National guidelines state that the onus of ensuring that the ASHA has adequate stock of misoprostol rests with the ANM. The calculation for doses of misoprostol to be given to ASHAs depends upon the number of pregnant women enlisted who are likely to deliver at home. In addition the ASHA should also have at least one or two additional doses in case of emergency. At all storage points it should be ensured that misoprostol is stored below 40°C protected from sunlight and moisture. (26)

### **Consumption:**

The final consumption of misoprostol by the beneficiaries depends on four important factors:

- Training of service providers responsible for delivering the product to the end user
- Robust monitoring and supervision of the initiative
- An effective communication strategy
- Incentives to the service providers

### ***Devising an effective training package:***

The states should plan the trainings in such a way that the time taken to complete the trainings should coincide with the procurement of misoprostol so that all the health workers are trained before they initiate the advance distribution of misoprostol in their service delivery areas. It should be ensured and be mandatory on the part of the state to ensure that no untrained worker undertakes the intervention in their target areas. It is therefore advisable that all trainings are completed before the start of the initiative in a defined geographical area.

### ***Monitoring and Supervision of the initiative:***

Having a robust monitoring and supervision system is the key for successful implementation of any public health

intervention. Being a new product, the use of misoprostol needs to be effectively monitored at all levels. The following steps need to be emphasized:

- A sound and effective recording and reporting mechanism
- Preventing leaks into the system
- Reviewing status of implementation during field visits

### ***Recording and Reporting System:***

The National Misoprostol guidelines (10) have elaborated on a sound recording and reporting system to streamline implementation. Important points which need to be considered include:

- At the block level the distribution of misoprostol to the ANM will be done by the pharmacist, in the presence of the block Medical Officer in charge. The ANM will in turn distribute the drug to the ASHA
- Adequate stock management needs to be undertaken at all levels of distribution. The state and district inventory stores should maintain the stock distributed to the blocks along with the batch number, expiry date and the date of distribution. The same should be followed at the block level and by the ANMs. The ASHAs should have a record of the doses distributed to the pregnant women. In a similar fashion the usage report should flow from the ASHA to the State.
- The reporting of adverse events should also be undertaken rigorously. Any incident of adverse event following administration of misoprostol is to be reported immediately by the ASHA to the ANM and the case needs to be referred to the nearest health facility. The ANM is mandated to record the event in the designated format following visit to the affected pregnant woman.

The monitoring and supervision system will be the key to identify and take corrective

actions during the implementation of the initiative.

***Preventing leaks into the system:***

Since misoprostol is used for multiple obstetrical and gynecological conditions, leaks are to be prevented in all conditions to minimize wrong or incorrect use. Misoprostol in combination with mifepristone is a recommended abortifacient and often misoprostol is used alone for this purpose. <sup>(27)</sup> Hence the doses used at all levels need to be accounted for and all unused misoprostol doses should be returned back to the ANM by the ASHA.

***Reviewing status of implementation during all field visits:***

A critical component includes reviewing the status of implementation during visits to the field by all state and district officials and partner agencies. Components of the intervention need to be incorporated in Supportive Supervision checklists being used at all levels and appropriate feedback mechanism needs to be put in place.

***Communication strategy:***

Any new intervention should be backed by a sound communication strategy. Channels of communication usually vary with respect to the nature of the intervention. The communication strategy for misoprostol should be built in a way that the impact is felt in the notified areas without offsetting the trend of institutional deliveries in the same or other areas. Hence Interpersonal Communication (IPC) is the most important channel which should have the maximum desirable impact. Counselling of beneficiaries assumes much importance and should be the focus point for the communication strategy, where institutional deliveries are promoted and misoprostol advocated for cases where home delivery is the only possible route. In addition, since multiple uses of misoprostol is documented, the communication material adopted for use should very explicitly state the use of misoprostol for prevention of PPH as the

one followed in Nepal which labeled the misoprostol pills as “mother’s safety pills - it saves the mother. <sup>(17)</sup> ” Also since occurrence of side effects will adversely impact the intervention, mandatory check-up by medical officers should be highlighted in the communication strategy to rule out cases as those of multiple pregnancy and correctly identify the women who would be administered Misoprostol. Overall all available opportunities should be utilized for counseling women who have been identified for advance distribution of misoprostol. These include interaction at Village Health Nutrition and Sanitation Days (VHSND) days, involving village Self Help Groups (SHGs) and counseling during home visits by ASHAs.

The Misoprostol implementation guide <sup>(21)</sup> identifies four points of interaction between the CHW and a pregnant woman for the purposes of misoprostol counseling and distribution. This includes:

- Registration during first ANC when she identifies a newly pregnant woman in her catchment area as part of their general maternal health responsibilities
- The first counseling visit when PPH and misoprostol are discussed
- The second counseling visit at approximately eight months when the pregnant woman receives misoprostol
- A postpartum visit within 24 hours and then another within seven days

***Incentives:***

The GOI guidelines make suitable provision for incentivizing ASHA for each case where she has distributed a dose of misoprostol for prevention of PPH. The conditionality for distribution of incentives to ASHA includes the following:

- Pre-identification of pregnant women likely to deliver at home
- Certification of ruling out multiple pregnancy or other contraindications by

the ANM on the Mother and Child Protection Card (MCP) card

- Proper instructions given to the pregnant women on the dose and administration of misoprostol for prevention of PPH

GOI has recently introduced the Performance Based Incentives (PBI) for High Priority Districts. <sup>(28)</sup> A specific PBI enlisted is proportion of home deliveries attended by Skilled Birth Attendant (SBA) trained ANM. An incentive of Rs 1000/- is proposed for home deliveries conducted by SBA trained ANMs in the HPDs of EAG states, North Eastern States, Assam, Jammu & Kashmir and Himachal Pradesh in villages notified based on GOI criteria for home deliveries. The incentive will be payable only in the case that mother and newborn are enlisted in Mother and Child

Tracking System (MCTS), mother and newborn are healthy at the end of 42 days or 6 weeks and birth certificate has been obtained for the newborn and handed over to the mother. The states can link this incentive with administration of misoprostol following such home deliveries, which in turn should also ensure the presence of an ANM during the delivery period.

**Monitoring and Evaluation (M&E) framework:**

Devising a strong M&E framework remains the final component for ensuring smooth implementation of the initiative. The misoprostol program implementation guide identifies a set of core indicators for reviewing program implementation. <sup>(21)</sup> (Table 4)

**Table 4: Suggested M&E indicators for advance distribution of misoprostol**

A. Output indicators	
A1	Distribution Rate: Percentage of pregnant women who received misoprostol
A2	Misoprostol Coverage Rate – Community Level: Percentage of women with homebirths who receive and ingest misoprostol
A3	Of those with home births who ingested misoprostol, the percentage of women who ingested it at the correct time
A4	Percentage of deliveries at health facilities
A5	Uterotonic Coverage Rate - Health Facility Level: Percentage of women who delivered at a health facility and were given a uterotonic immediately after birth
B. Training indicators	
B6	Percentage of CHWs/TBAs trained on misoprostol distribution package*
B7	Percentage of ANC providers trained on misoprostol distribution package*
B8	Percentage of SBAs trained in Active Management of Third Stage of Labour (AMTSL)
B9	Percentage of CHWs and TBAs who know the correct administration of misoprostol
C. Drug Stock Outs	
C10	Percentage of misoprostol distribution points (Health Facility and CHWs/TBAs) experiencing NO stock-out during the reporting period
C11	Percentage of oxytocin administration points (health facilities) experiencing NO stock out during the reporting period
D. Adverse Events and Complications	
D12	Percentage of women with homebirths who ingested misoprostol and experienced an adverse event
D13	Percentage of women who used misoprostol at a home birth, experienced PPH and were referred to a health facility
D14	Total number of maternal deaths
E. Women Satisfaction	
E15	Percentage of women who are satisfied with the use of misoprostol

Of these 15 indicators A1, A2, A3, A4, A5, C10 and D13 have been identified as core indicators. States are suggested to include these indicators in the M&E framework and others can be adopted as per need.

**CONCLUSION**

Various studies conducted across diverse low resource settings in the past have evaluated the effectiveness of the intervention in reducing maternal deaths. Two major studies state the effectiveness as 7% <sup>(29)</sup> and 32% <sup>(30)</sup> in their study areas.

Translated into the Indian setting, with an MMR of 167 per 1 lakh live births and annual birth cohort of 27 million, this approach would help avert 3156 - 13527 maternal deaths. Implementing this intervention should be extremely beneficial for the country, however as documented by the process adopted in other countries, the

implementation process should be undertaken with a thorough monitoring and supervision mechanism in place to optimize gains and prevent untoward events.

## REFERENCES

1. MDG 5: improve maternal health. Available from: [http://www.who.int/topics/millennium\\_development\\_goals/maternal\\_health/en/](http://www.who.int/topics/millennium_development_goals/maternal_health/en/). Accessed on: 01/10/14
2. United Nations. The Millennium Development Goals Report: 2014. New York. Available from: <http://www.un.org/millenniumgoals/2014%20MDG%20report/MDG%202014%20English%20web.pdf>
3. Office of Registrar General, India. Government of India. Maternal Mortality Ratio Bulletin 2011-13. Available from: [http://www.censusindia.gov.in/vital\\_statistics/mmr\\_bulletin\\_2011-13.pdf](http://www.censusindia.gov.in/vital_statistics/mmr_bulletin_2011-13.pdf)
4. Office of Registrar General, India. A Presentation on Maternal Mortality Levels (2010-12). 20<sup>th</sup> December 2013. Available from: [www.censusindia.gov.in/.../MMR\\_2010-12-Report\\_Pres\\_19.12.2013.ppt](http://www.censusindia.gov.in/.../MMR_2010-12-Report_Pres_19.12.2013.ppt)
5. Dr. C. Chandramouli Registrar General & Census Commissioner, India. Annual Health Survey (AHS) Second Updation Bulletin 2012-13 04th March, 2014. Available from: [http://www.censusindia.gov.in/vital\\_statistics/AHSBulletins/AHS\\_Bulletin\\_2012-13\\_Presentation.pdf](http://www.censusindia.gov.in/vital_statistics/AHSBulletins/AHS_Bulletin_2012-13_Presentation.pdf)
6. UNICEF: The State of the World's Children 2009: Maternal and Newborn Health. New York: United Nations Children's Fund; 2008.
7. STATcompiler. <http://www.measuredhs.com>.
8. Prata N, Passano P, Rowen T, Bell S, Walsh J, Potts M: Where there are (Few) skilled birth attendants. *J Health Popul Nutr* 2011, 29(2):81-91.
9. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller A, Daniels J, Gülmezoglu AM, Temmerman M, Alkema L. Global causes of maternal death: a WHO systematic analysis. *Lancet Glob Health*. 2014;11:e323-e333. doi: 10.1016/S2214-109X(14)70227-X
10. Ministry of Health and Family Welfare. Operational Guidelines and Reference Manual Prevention of Post-Partum Haemorrhage through Community Based Distribution of Misoprostol. Government of India: Nov 2013.
11. Prata N, Hamza S, Bell S, Karasek D, Vahidnia F, Holston M: Inability to predict postpartum hemorrhage: insights from Egyptian intervention data. *BMC Pregnancy Childbirth* 2011, 11:97.
12. Ramanathan G, Arulkumaran S: Postpartum hemorrhage. *J Obstet Gynaecol Can* 2006, 28(11):967-973.
13. WHO. WHO recommendations for the prevention and treatment of postpartum haemorrhage. Geneva: World Health Organization, 2012
14. Smith JM, Gubin R, Holston MM, Fullerton J, Prata N: Misoprostol for postpartum hemorrhage prevention at home birth: an integrative review of global implementation experience to date. *BMC Pregnancy Childbirth* 2013, 13:44.
15. Ejembi CL, Norick P, Starrs A, Thapa K: New global guidance supports community and lay health workers in postpartum hemorrhage prevention. *Int J Gynecol Obstet* 2013, 122(3):187-190.
16. Hundley VA, Avan BI, Sullivan CJ, Graham WJ: Should oral misoprostol be used to prevent postpartum haemorrhage in home-birth settings in low resource countries? A systematic review of the evidence. *Br J Obstet Gynecol* 2013, 120(3):277-285.
17. Family Health International & Gynuity Health Projects. Reaching women wherever they give birth. Misoprostol for Postpartum Haemorrhage. Stories of success in Bangladesh, Nepal and Zambia.
18. Rebecca A, O'Brien Barbara M. Uses of misoprostol in obstetrics and gynecology. *Rev Obstet Gynecol*. 2009; 2(3):159-168

19. Crowe S, Utley M, Costello A, Pagel C: How many births in sub-Saharan Africa and South Asia will not be attended by a skilled birth attendant between 2011 and 2015? *BMC Pregnancy Childbirth* 2012, 12:4.
20. Montagu D, Yarney G, Visconti A, Harding A, Yoong J: Where do poor women in developing countries give birth? A multi-country analysis of demographic and health survey data. *PLoS One* 2011, 6:e17155
21. Lindsay Grenier, Jeffrey Smith, Sheena Currie, Stephanie Suhowatsky. *Advance Distribution of Misoprostol for Self-Administration: Expanding Coverage for the Prevention of Postpartum Hemorrhage. Program Implementation Guide Revised, November 2013. USAID-MCHIP*
22. Derman RJ, Kodkany BS, Goudar SS, Geller SE, Naik VA, Bellad MB, Patted SS, Patel A, Edlavitch SA, Hartwell T, et al: Oral misoprostol in preventing postpartum haemorrhage in resource-poor communities: a randomized controlled trial. *Lancet* 2006, 368(9543):1248–1253.
23. Mobeen N, Durocher J, Zuberi N, Jahan N, Blum J, Wasim S, Walraven G, Hatcher J: Administration of misoprostol by trained traditional birth attendants to prevent postpartum haemorrhage in homebirths in Pakistan: a randomised placebo-controlled trial. *BJOG* 2011, 118(3):353–361.
24. Hofmeyr GJ, Gülmezoglu AM, Novikova N, and Lawrie TA. 2013. Postpartum misoprostol for preventing maternal mortality and morbidity. *Cochrane Database Syst Rev* 15: 7.
25. National list of essential medicines of India 2011. Available from: <http://www.cdsco.nic.in/> [Last cited on 2011 Jun 23].
26. <http://druginfosys.com/Drug.aspx?drugCode=489&drugName=Misoprostol&type=12>
27. <http://apps.who.int/rhl/fertility/abortion/dgguide/en/>
28. Maternal Health Division, Ministry of Health and Family Welfare, Government of India. *RMNCH+A: Illustrative Performance Based Incentives for High Priority Districts (HPDs)*. New Delhi, 2014.
29. Prata et al.: Modeling maternal mortality in Bangladesh: the role of misoprostol in postpartum hemorrhage prevention. *BMC Pregnancy and Childbirth* 2014 14:78.
30. Pagel C, Lewycka S, Colbourn T, Mwansambo C, Meguid T, Chiudzu G, Utley M, Costello AML: Estimation of potential effects of improved community based drug provision, to augment health-facility strengthening, on maternal mortality due to postpartum haemorrhage and sepsis in sub-Saharan Africa: an equity-effectiveness model. *Lancet* 2009, 374 (9699):1441–1448.

How to cite this article: Taneja G, Gera R, Bajpayee D et. al. Community based advance distribution of misoprostol as a measure to prevent maternal deaths due to post-partum hemorrhage. *Int J Health Sci Res.* 2015; 5(8):585-596.

\*\*\*\*\*