



# Scaling up of Misoprostol for Prevention of Postpartum Hemorrhage in 29 Upazilas of Bangladesh

## Final Report in Brief

In Bangladesh, the estimated maternal mortality ratio is 194 maternal deaths per 100,000 live births.<sup>1</sup> More than 12,000 women die of pregnancy-related causes every year and due to its high population density, Bangladesh is one of eleven countries that comprised 65% of the world's maternal deaths in 2008.<sup>2</sup> Postpartum hemorrhage (PPH), or excessive bleeding after delivery, contributes to almost a third of maternal deaths in Bangladesh (31%).<sup>1</sup> The majority of births take place at home (77%), and only 27% are attended by a skilled birth attendant.<sup>1</sup> Therefore, feasible interventions are needed at the household level to prevent this leading cause of maternal death and enable timely referral.

In 2009, the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) and Rangpur Dinajpur Rural Service (RDRS) Bangladesh collaborated with Venture Strategies Innovations (VSI) and the Bixby Center for Population, Health and Sustainability in the School of Public Health at the University of California, Berkeley on an operations research project that scaled up the introduction of two interventions to prevent and recognize PPH – misoprostol and Quaiyum's mat (a blood loss collection tool) – into the existing RDRS system for distributing clean

delivery kits (CDKs). The operations research was implemented in the six northwestern districts of Bangladesh, containing 29 upazilas (sub-districts), where RDRS has an existing reproductive health program: Lalmonirhat, Kurigram, Nilphamari, Thakurgaon, Dinajpur and Panchagarh.

The purpose of this operations research was to provide empirical evidence to inform policy decision makers in Bangladesh on the feasibility of scaling up the use of misoprostol and Quaiyum's mat at home births, as included in a

modified CDK distributed during pregnancy by community health workers (CHWs) at antenatal care (ANC) and by trained RDRS birth attendants at delivery.

### OPERATIONS RESEARCH DESIGN

As part of its reproductive health program, RDRS distributes CDKs to pregnant women, which include instructions and supplies to enable the use of clean delivery practices by low-level providers. CHWs distribute CDKs during ANC, and trained RDRS birth attendants provide the CDKs at delivery. While RDRS has demonstrated that it can reach a large proportion of the women delivering at home using these channels, the current items included in a CDK do not equip women to identify nor prevent one of the leading causes of maternal death, PPH.

This operations research incorporated misoprostol and Quaiyum's mat into RDRS's existing CDK. CHWs educated women attending ANC on the use of misoprostol and using Quaiyum's mat to identify PPH; screened for medical eligibility to receive misoprostol; and offered the CDK for use at home births if they were 32 weeks or greater gestation. If a woman was

**Table 1: Coverage of CDK distribution to enrolled clients by home and facility birth**

	Home birth <sup>1</sup> (n=67,611)	Facility birth (n=9,721)	Total (n=77,363)
<b>Received a CDK</b>	46,768 (69.2%)	7,112 (73.2%)	53,897 (69.7%)
Received CDK during pregnancy at ANC (% of received CDK)	46,589 (99.6%)	7,096 (99.8%)	53,702 (99.6%)
Received CDK at delivery with RDRS birth attendant (% of received CDK)	179 (0.4%)	16 (0.2%)	195 (0.4%)
<b>Did not receive a CDK</b>	20,843 (30.8%)	2,609 (26.8%)	23,466 (30.3%)

Source: Pregnancy Card

<sup>1</sup>Includes births *en route* to the health facility

previously enrolled by a CHW during an ANC visit but not given a CDK (i.e. did not return after 32 weeks), the RDRS birth attendant could provide the woman with the CDK during delivery at home and assist her in using its contents. Among women who enrolled in the operations research, every twentieth who delivered was selected to participate in a postpartum interview.

**RESULTS**

CHWs and RDRS birth attendants distributed the newly equipped CDKs

**Figure 1: Participation in the operations research**



from May 2009 through September 2010.<sup>‡</sup> During the 17 months of data collection, 118,594 women registered with RDRS (Figure 1). The data in this analysis includes information collected during ANC and postnatal care from the 77,337 women who delivered during the period of data collection, as well as 3,016 postpartum interviews.

**CHWs and RDRS birth attendants reach women with CDKs**

Of the women who delivered during the implementation of the operations research, 70% received a CDK at some point during pregnancy or delivery, demonstrating that distributing CDKs through these channels is a feasible way to reach a large number of women (Table 1). Almost all of the women who received a CDK obtained it during pregnancy at an ANC visit with a CHW (>99%). Of note, 72% of the 20,843 women who delivered at home and did not receive a CDK delivered with a RDRS birth attendant. This highlights the importance of equipping RDRS birth attendants with CDKs to ensure misoprostol is on-hand to prevent PPH and Quaiyum’s mat is available to identify the need for referral.

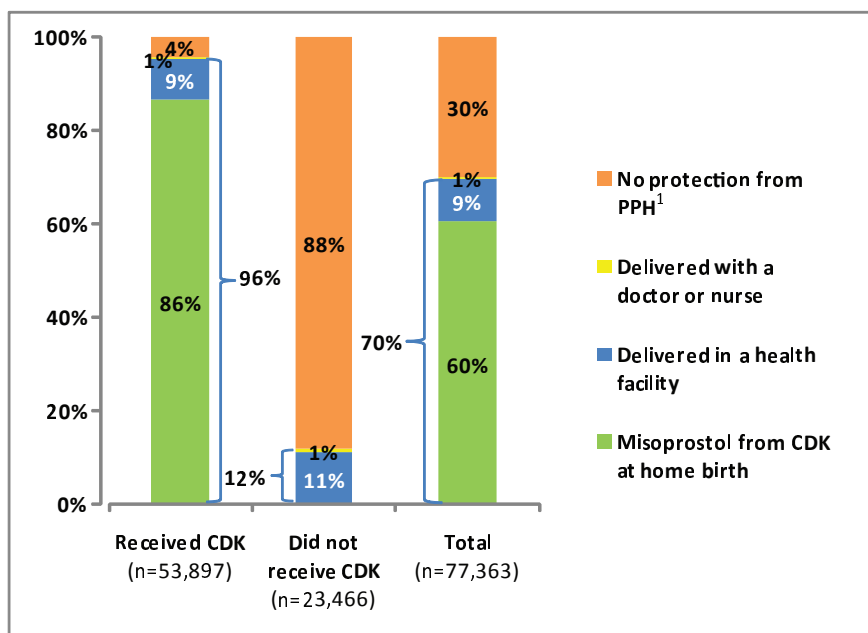
**Including misoprostol in CDK distribution increases births protected from PPH**

Women who received a CDK with misoprostol either during ANC or at delivery with a RDRS birth attendant were eight times more likely to be protected from PPH compared to women who did not receive a CDK (96% vs. 12%)(Figure 2). If misoprostol had not been included in the new CDK, only 10% of births would have been protected from PPH by the use of a uterotonic drug at delivery. Misoprostol distribution in CDKs protected 60% of births from PPH that would have otherwise been unprotected.

**Misoprostol use at home births is safe**

Almost all of the 1,893 women who used misoprostol at home and participated in the postpartum interview reported using the drug correctly (96%), taking the correct dose at the correct time. The high use rate and data on correct use of misoprostol demonstrate the effectiveness of the education women were given by CHWs and RDRS birth attendants when they received the CDK. Furthermore, the experience of postpartum symptoms

**Figure 2: Births protected from PPH by receipt of CDK<sup>^</sup>**



Source: Pregnancy Card

<sup>^</sup>Excludes 40 women with missing information on one or more variables (0.1%)

<sup>1</sup>Delivered at home and did not take misoprostol

was very low amongst misoprostol users (12%), and self-resolving within an hour.

### Women use Quaiyum's mat to estimate blood loss

Almost all women who received a CDK used Quaiyum's mat to estimate blood loss at delivery (96%). In addition, four out of five women who

had received a CDK mentioned using the mat when asked how they know if a woman is bleeding too much after delivery. Furthermore, the vast majority of women who used the mat said they found it useful and would use it again in their next delivery (Figure 3). This is evidence that Quaiyum's mat is a feasible and acceptable means of assessing

postpartum blood loss in Bangladesh, improving recognition of PPH and facilitating a timely referral to prevent unnecessary delays in seeking care.

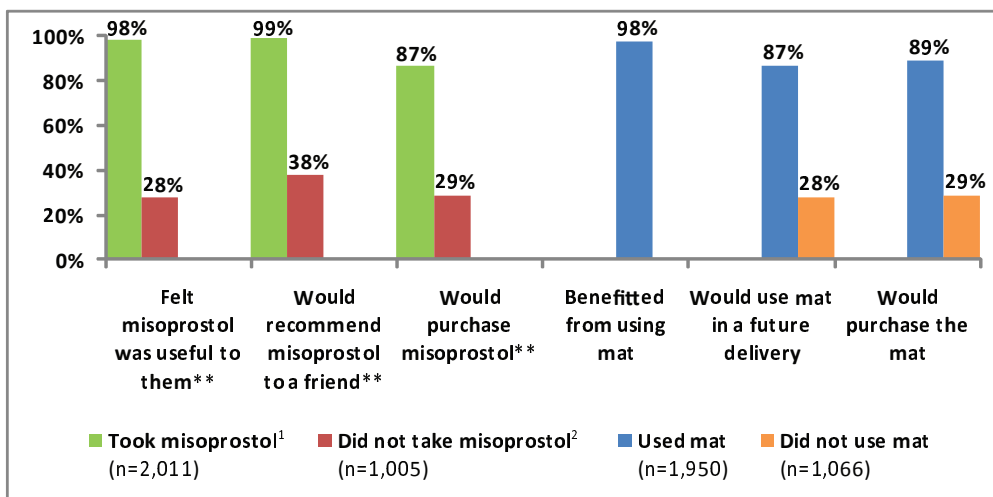
### Misoprostol and Quaiyum's mat are acceptable to women

Misoprostol is very acceptable to women who have used the drug. Over 98% of women in the postpartum sample who used misoprostol found it helpful and would recommend its use to a friend (Figure 3). Therefore, integrating these two technologies into a modified CDK is an acceptable intervention to women for prevention and identification of PPH at home births.

### CONCLUSIONS

With enrollment of over 118,500 women, this is one of the largest operations research projects assessing the use of misoprostol distributed directly to women for the prevention of PPH. This project demonstrated that misoprostol and Quaiyum's mat are two simple

**Figure 3: Women's acceptability of misoprostol and Quaiyum's mat**



Source: Postpartum Interview

\*\* p<0.01

<sup>1</sup>At home or facility birth

<sup>2</sup>Includes women who received injection (n=491)

interventions that can easily be added to current CDKs and, for the first time, equip women and attendants at home deliveries to protect women from PPH. Misoprostol use at home deliveries, distributed through CDKs, increased protected births in the operations research areas by 60%. The findings from this project demonstrate that including misoprostol and Quaiyum's mat in CDKs and distributing them to women through ANC visits and at delivery by trained traditional birth attendants (TBAs) has the potential to increase the number of women who receive a uterotonic drug for prevention of PPH at delivery. Misoprostol for home births is a safe and effective intervention that is acceptable to women in Bangladesh.

## RECOMMENDATIONS

All programs in Bangladesh currently distributing CDKs should begin to include misoprostol and Quaiyum's mat to prevent and identify PPH at home births. All providers who distribute CDKs, including CHWs, TBAs, ANC providers and others, should be trained to educate women about PPH, misoprostol and assessing blood loss using Quaiyum's mat. Women's retention of information about and correct use of misoprostol shows the importance of arming community-level providers with specific, concrete maternal health



*Project participant and RDRS birth attendant after a home birth in Nilphamari district*

messages. In addition, any program with a network of trained TBAs should include them in their distribution network for CDKs. Additional means of reaching women with a modified CDK that includes these life-saving technologies should be considered.

*We recommend to policymakers and key stakeholders national scale-up of the addition of misoprostol and Quaiyum's mat to CDKs to prevent and identify PPH, respectively. Further, we recommend these CDKs be distributed to women during ANC visits, as well as by trained traditional birth attendants for home deliveries throughout Bangladesh.*

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<sup>1</sup>National Institute of Population Research and Training (NIPORT), MEASURE Evaluation, University of North Carolina – Chapel Hill, ICDDR,B. Bangladesh Maternal Mortality and Health Care Survey 2010: Summary of Key findings and implications, February 2011.

<sup>2</sup>World Health Organization (WHO). Trends in maternal mortality: 1990 to 2008. Estimates developed by WHO, UNICEF, UNFPA and The World Bank. Geneva: WHO, 2010.

<sup>¥</sup>RDRS birth attendants only distributed CDKs between March and September 2010.