Future Health Systems
Innovations for equity

WWW.FUTUREHEALTHSYSTEMS.ORG

RESEARCH IN FOCUS:
The role of misoprostol in making home births safer

ABOUT THIS *RESEARCH IN FOCUS*

THIS DOCUMENT IS BASED ON RESEARCH CONDUCTED BY TORI SUTHERLAND AND DAVID BISHAI FROM JOHNS HOPKINS SCHOOL OF PUBLIC HEALTH. IT WAS WRITTEN BY KATE HAWKINS FROM THE INSTITUTE OF DEVELOPMENT STUDIES. IT PROVIDES AN INTRODUCTION TO THE USE OF MISOPROSTOL TO MAKE HOME BIRTH SAFER AND EXPLAINS THE RELEVANCE OF NEW LEARNING FROM FUTURE HEALTH SYSTEMS TO WHAT WE ALREADY KNOW.

FUTURE HEALTH SYSTEMS RESEARCH PROGRAMME CONSORTIUM

IS WORKING TO TRY AND ENSURE REAL HEALTH GAINS FOR THE POOR. THROUGH RESEARCH, PARTNERSHIP AND COMMUNICATIONS WE WANT TO INFORM AND INFLUENCE THE HEALTH SYSTEMS OF THE FUTURE WITH SOLUTIONS THAT ARE INNOVATIVE AND POVERTY FOCUSSED.

BACKGROUND

According to the World Health Organisation a woman dies every minute from complications related to pregnancy or childbirth. For each woman that dies 30 more are left ill or disabled. The numbers related to maternal ill health make grim reading, but the real scandal is that we have the medical technologies and the knowledge to save women's lives – in developed countries death in childbirth is a rare tragedy – but in many settings we have been unable to put into place the systems and interventions that would really make a difference.

Maternal ill health is not a burden shared equally across the world. 99 per cent of deaths occur in developing countries. The links between maternal health and development were reaffirmed by the international community through its inclusion as the fifth Millennium Development Goal (MDG 5). MDG 5 aims to:

- reduce maternal mortality by three-quarters between 1990 and 2015;
- achieve universal coverage of skilled care at birth by 2015; and
- ensure universal access to reproductive health by 2015.

There is broad agreement that weak and failing health systems and a shortage of human resources for health make great contribution to many countries' inability to reduce the number of women dying as a result of pregnancy and child birth. Because of this, basic and emergency obstetric care is inaccessible to many women who require it.

MDG 5 will not be met by 2015 without innovative and bold action.

POSTPARTUM HAEMORRHAGE AND MISOPROSTOL

Postpartum haemorrhage is one of the largest contributors to maternal death and illness in developing countries and accounts for around 30% of all maternal deaths worldwide (Khan et al., 2006).

Postpartum haemorrhage, as defined by the World Health Organisation, is postpartum blood loss in excess of 500ml but in populations with a high prevalence of anaemia blood loss less than 500ml has been noted to have severe physical consequences (McCormick et al., 2002). Uterine atony, or failure of the uterus to contract after delivery, is the most common cause of postpartum haemorrhage (Mousa and Walkinshaw, 2001).

In cases of postpartum haemorrhage any delay in seeking health care can be deadly - the average time to death from onset of postpartum haemorrhage is two hours (Maine 1993). Ideally all pregnant women would have access to emergency obstetric care. Until we get to that stage interventions that can be delivered in the home to prevent post partum haemorrhage have the

potential to save many lives.

Misoprostol is a safe, effective and low cost pill that has been shown to reduce postpartum bleeding after delivery. Misoprostol is widely available throughout the world, and has been available in generic formulation for several years. It has been used extensively for the prevention of gastric ulcers. It is also used to contract the uterus to prevent and/or stop excessive bleeding. Derman et al. conducted a trial of orally administered misoprostol in rural India with 1620 women. They found significant decreases in the rate of acute postpartum haemorrhage and mean blood loss (Derman et al., 2006)

If misoprostol is administered by an untrained provider, it may lead to severe complications. Advocates of misoprostol use after delivery emphasize the importance of provider training and development of differentiated packing for each indication of misoprostol use (Sanghvi et al., 2004). In the case of postpartum haemorrhage prevention, a package would contain three 200ug tablets of misoprostol and would be clearly labelled for use after delivery of the baby.

There has been some controversy around misoprostol as it can also be used for medical abortion. In some settings it is procured illegally on the black market and self administered to induce abortion. This often occurs where safe abortion services are unavailable due to the law or inaccessible due to reasons such as prohibitive cost.

NEW EVIDENCE FROM FUTURE HEALTH SYSTEMS

Research from the Future Health Systems Research Programme Consortium, ***'Cost-effectiveness of misoprostol and prenatal iron supplementation as maternal mortality interventions in home births in rural India'***, has added to the body of knowledge on the delivery of misoprostol by skilled providers outside the health system (Sutherland and Bishai, 2009). In the past it has not been possible to quantify the effects of this intervention on death rates empirically due to the large sample size that would be required. The research used mathematical modelling based on data from India. The simulation was designed to reflect the delivery outcomes of 10,000 women. In India, 83% of rural deliveries occur at home. There are 540 maternal deaths per 100,000 live births and 36% of these are due to postpartum haemorrhage or anaemia. These are both conditions that can be prevented in the home by evidence-based, low resource interventions that do not require clinic or hospital care. Misoprostol is manufactured in India and is widely available for around 33 USD per 200ug tablet.

In our simulation, misoprostol use after delivery led to a 38% reduction in maternal deaths attributable to postpartum haemorrhage. Cost effectiveness is a critical element in shaping national and international donor policy and subsequent intervention, distribution and use. The median cost of preventing each death was $1,401. This cost compares favourably to other public health interventions. The estimated cost of improving comprehensive emergency obstetric care per life saved is $10,532 (Jamison et al., 2006). Our model shows that misoprostol is cost-effective. With greater use, misoprostol could save the lives of tens of thousands of women each year at a potentially low cost.

REFERENCES:

Derman RJ, Kodkany BS, Goudar SS, Geller SE, Naik VA, Bellad MB, Patted SS, Patel A, Edlavitch SA, Hartwell T, Chakraborty H, Moss N. (2006) Oral misoprostol in preventing postpartum haemorrhage in resource-poor communities: a randomised controlled trial. The Lancet. 2006;368(9543):1248-53

Jamison DT, Breman JG, Measham AR, Alleyne G, Claeson M, Evans DB, editors. Disease Control Priorities in Developing Countries. New York: Oxford University Press; 2006

Khan KS, Wojdyla D, Say L, Gulmezoglu AM, Van Look PF. (2006) WHO analysis of causes of maternal death: a systematic review. The Lancet 2006;367(9516):1066–74

Maine D. (1993) Safe motherhood programs: options and issues. New York: Columbia University; 1993 (42)

McCormick ML, Sanghvi HCG, Kinzie V, McIntosh N. (2002) Preventing postpartum haemorrhage in low-resource settings. International Journal of Gynecology & Obstetrics 2002;77(267-275)

Mousa H, Alfirevic Z. (2007) Treatment for primary postpartum haemorrhage. Cochrane Database of Systematic Reviews 2007;2007(1):1-25

Sanghvi H, Gulardi W, Changpong G, Fishel J, Ahmed S, Zulkarnin M. (2004) Prevention of Postpartum Hemorrhage Study, West Java, Indonesia. Baltimore, USA: JHPIEGO; 2004

Sutherland T and Bishai DM. (2009) Cost-effectiveness of misoprostol and prenatal iron supplementation as maternal mortality interventions in home births in rural India, March 2009 in print version of International Journal of Obstetrics and Gynecology, Jan 2009 in electronic pre publication version

MAIN MESSAGES:

- Our research shows that the administration of misoprostol to prevent postpartum haemorrhage is cost effective and safe when used appropriately.
- The use of misoprostol to prevent maternal deaths at home, in the absence of emergency obstetric care, could prevent many deaths in developing countries and take us nearer the realisation of Millennium Development Goal 5.
- Based on the evidence Ministries of Health should introduce misoprostol for post-partum haemorrhage prevention and train providers in its safe administration. This should be supported by international development funders. A learning approach should be taken to these interventions.
- The potential use of misoprostol for termination of pregnancy should not be seen as a barrier to the implementation of interventions using misoprostol to prevent death due to post partum haemorrhage. An estimated 15% of maternal deaths are due to unsafe abortion. Efforts should be made to provide safe abortion services where the law allows it and reform legislative structures that force women to seek unsafe abortion.

The authors express their appreciation for the financial support (Grant # H050474) provided by the UK Department for International Development (DFID) for the Future Health Systems research programme consortium. This document is an output from a project funded by DFID for the benefit of developing countries. The views expressed are not necessarily those of DFID.