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Maternal and Child Health
Integrated Program

Interventions for Impact in Essential Obstetric and Newborn Care

Africa Regional Meeting

21–25 February 2011
Addis Ababa, Ethiopia

Meeting Report

Editors

Jeffrey Smith
Joseph de Graft-Johnson
Galina Stolarsky
Rachel Taylor



**BILL & MELINDA
GATES foundation**

OXYTOCIN INITIATIVE PROJECT



The Laerdal Foundation for Acute Medicine



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Africa's Health
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of Pediatrics



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TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	v
ACKNOWLEDGMENTS	vii
INTRODUCTION	1
OPENING CEREMONY	3
Individual Remarks	3
Keynote Address: Maternal and Newborn Health in the Africa Region.....	4
 PART I: INTERVENTIONS FOR IMPACT IN OBSTETRIC HEALTH	
PLENARY SESSIONS	7
Reducing Maternal Mortality Due to Postpartum Hemorrhage (PPH)	7
Panel #1. New Evidence for Prevention and Treatment of Postpartum Hemorrhage	7
Panel #2. Overcoming Programmatic Barriers to Implementing PPH Prevention at the Facility Level	11
Panel #3. Experiences of Implementation of PPH Prevention and Treatment at the Community Level	14
Panel #4. Quality of Care: Essential Obstetric Care	18
Understanding the Evidence: Preventing, Detecting and Managing Pre-Eclampsia and Eclampsia (PE/E)	24
Panel #5. Evidence for Prevention and Detection of Pre-Eclampsia.....	25
Panel #6. Evidence for Management of Severe Pre-Eclampsia and Eclampsia.....	29
Panel #7. Implementation of PE/E Programs.....	32
Cross-Cutting Issues in Making an Impact in Obstetric Health.....	38
Panel #8. Measurements and Indicators to Assist PPH and PE/E Programming and Call to Action.....	38
Reducing Newborn Mortality Due to Asphyxia	42
Panel #9. Improving Neonatal Resuscitation—Helping Babies Breathe	42
GROUP AND TEAM ACTIVITIES	49
Skills and Discussion Sessions	49
Summary of Interventions for Reduction of Morbidity and Mortality	53

CLOSING ACTIVITIES (OF PART I)	56
Individual Reflections	56
Posters Awards Ceremony.....	57
Closing Remarks	57
 PART II: HELPING BABIES BREATHE (HBB) REGIONAL TRAINING OF TRAINERS (TOT) FOR AFRICA	
A. OVERVIEW OF NEWBORN RESUSCITATION TRAINING	58
B. ORIENTATION AND SETTING THE STAGE: PLENARY SESSION ON IMPROVING NEONATAL RESUSCITATION—23 FEBRUARY	58
C. HELPING BABIES BREATHE TRAINING OF TRAINERS— 24, 25 FEBRUARY	59
1. Opening Session	
2. Participants	
3. HBB Course Design and Learning Materials	
4. Session One: Provider Component	
5. Session Two: Facilitator Component	
6. Discussion of HBB Implementation at the Country Level	
7. HBB Closing Ceremony and Presentation of Certificates	
8. Course Evaluation	
9. Next Steps	
 APPENDICES	69
Appendix A. List of Participants	
Appendix B. Conference Agenda	
Appendix C. Presenters' Information	
Appendix D: Results of Country Program Poster Reviews	
Appendix E: HBB Course Objectives and Detailed Agenda	
Appendix F: HBB Participant, Observer and Facilitator List	
Appendix G: HBB Knowledge and Skills Assessments	
Appendix H: Addis HBB Facilitator Guide	
 REFERENCES.....	114

ABBREVIATIONS AND ACRONYMS

AAP	American Academy of Pediatrics
AMTSL	Active management of third stage of labor
ANC	Antenatal care
CHW	Community health worker
CI	Confidence interval
EmOC	Emergency obstetric care
EmONC	Emergency obstetric and newborn care
EONC	Essential obstetric and newborn care
ECSACON	East, Central, and Southern African College of Nursing
FIGO	International Federation of Gynecology and Obstetrics
FP	Family planning
HBB	Helping Babies Breathe
HIS	Health information system
HMIS	Health management information system
ICM	International Confederation of Midwives
IU	International unit
LGA	Local government authority
mcg	Microgram
MCH	Maternal and child health
MCHIP	Maternal and Child Health Integrated Program
MDG	Millennium Development Goal
MgSO₄	Magnesium sulfate
mL	Milliliter
MMR	Maternal mortality ratio
MNCH	Maternal, newborn and child health
MNH	Maternal and newborn health
MOH	Ministry of health
NGO	Nongovernmental organization
PE/E	Pre-eclampsia and eclampsia
POPPHI	Prevention of Postpartum Hemorrhage Initiative
PPH	Postpartum hemorrhage
QoC	Quality of care
RCQHC	Regional Centre for Quality of Health Care
SBA	Skilled birth attendant
SBM-R	Standards-Based Management and Recognition

TBA	Traditional birth attendant
USAID	United States Agency for International Development
VSI	Venture Strategies Innovations
WHO	World Health Organization
WHO/AFRO	WHO Africa Regional Office

ACKNOWLEDGMENTS

This Africa Regional Meeting was organized by USAID's flagship Maternal and Child Health Integrated Program (MCHIP) with funding from the United States Agency for International Development (USAID), as well as financial and administrative support from the Bill & Melinda Gates Foundation-supported Oxytocin Initiative, and in collaboration with the WHO Africa Regional Office (WHO/AFRO), the International Federation of Gynecology and Obstetrics (FIGO), the International Confederation of Midwives (ICM) and the Federal Ministry of Health of Ethiopia. Additional support was provided by Venture Strategies Innovations (VSI), USAID-funded Africa's Health in 2010, the American Academy of Pediatrics, the Laerdal Foundation for Acute Medicine, the Regional Centre for Quality of Health Care (RCQHC)/Kampala and the East, Central, and Southern African College of Nursing (ECSACON).

Special acknowledgment is made of the work of all colleagues at the MCHIP Office in Ethiopia for their administrative, technical and logistical support.

MCHIP would like to thank the following organizations that supported participants, speakers and facilitators at the conference:

American Academy of Pediatrics	PATH
Africa's Health in 2010	Population Council
Bill & Melinda Gates Foundation	Regional Centre for Quality of Health Care (RCQHC)
International Confederation of Midwives	UNICEF
Gynuity	UNFPA
Jhpiego	University of British Columbia
Laerdal Foundation for Acute Medicine	University of Oxford
MacArthur Foundation	USAID/Washington
MCHIP/Washington, DC	USAID regional and country missions
MCHIP/Country Offices	Venture Strategies Innovations (VSI)
Management Sciences for Health (MSH)	World Health Organization
National Institutes of Health	

We also would like to thank everyone whose special efforts helped to make this conference a success.

This program and report were made possible by the generous support of the American people through the United States Agency for International Development (USAID), under the terms of the Leader with Associates Cooperative Agreement GHS-A-00-08-00002-000. The contents are the responsibility of the Maternal and Child Health Integrated Program (MCHIP) and do not necessarily reflect the views of USAID or the United States Government.

The Maternal and Child Health Integrated Program (MCHIP) is the USAID Bureau for Global Health flagship maternal, neonatal and child health (MNCH) program. MCHIP supports programming in maternal, newborn and child health, immunization, family planning, malaria and HIV/AIDS, and strongly encourages opportunities for integration. Cross-cutting technical areas include water, sanitation, hygiene, urban health and health systems strengthening.

INTRODUCTION

The Africa Regional Meeting on *Interventions for Impact in Essential Obstetric and Newborn Care* was held in Addis Ababa, Ethiopia, the week of February 21–25, 2011. Organized by the Maternal and Child Health Integrated Program (MCHIP), USAID’s flagship maternal, neonatal and child health (MNCH) program—with financial and administrative support from the Bill & Melinda Gates Foundation-supported Oxytocin Initiative; in collaboration with the International Federation of Gynecology and Obstetrics (FIGO) and the International Confederation of Midwives (ICM); and with additional financial, as well as material and/or technical assistance from Venture Strategies Innovations (VSI), the USAID-funded Africa’s Health in 2010, the American Academy of Pediatrics (AAP), the Laerdal Foundation for Acute Medicine, the Regional Centre for Quality of Health Care (RCQHC) and the East, Central, and Southern African College of Nursing (ECSACON)—the meeting brought together policy leaders, experienced clinicians and program managers with a goal to support accelerated implementation and expansion of maternal and newborn health programs in countries throughout Africa, with a specific focus on Prevention and Management of Postpartum Hemorrhage, Pre-Eclampsia/Eclampsia and Newborn Asphyxia.

Over 300 individuals representing 36 countries attended the meeting (Appendix A), including participants and presenters from the UK, Canada, Switzerland, Sweden, New Zealand, Norway, USA and the following African countries:

Angola	Ghana	Mauritius	South Sudan
Benin	Kenya	Mozambique	Swaziland
Botswana	Lesotho	Nigeria	Tanzania
Congo	Liberia	Rwanda	Uganda
Equatorial Guinea	Madagascar	Senegal	Zambia
	Malawi	Somaliland	Zimbabwe
Ethiopia	Mali	South Africa	

The Africa Regional Meeting on *Interventions for Impact in Essential Obstetric and Newborn Care* was designed to help African countries pursue these evidence-based interventions and strengthen national programs aiming to improve maternal and neonatal health.

Part I of the Meeting, February 21 to 23, focused on maternal health—sharing experiences about implementation of programs for the prevention and management of PPH and PE/E. Recognizing that a fundamental component of skilled attendance is the provision of essential obstetric and newborn care (EONC), this meeting reviewed programmatic progress in addressing PPH, presented technical evidence for interventions to prevent and manage PE/E, and discussed the implementation of interventions to reduce PPH and PE/E in Africa. Part I also included a plenary session on newborn asphyxia (Panel #9). This was intended to function as a “bridge” to Part II of the meeting, which was a training-of-trainers event for the Helping Babies Breathe (HBB) initiative. It also provided an update on critical issues in addressing newborn asphyxia for attendees who would not be participating in Part II of the Meeting.

Part II of the Meeting, February 24 and 25, focused on the development of experts and advocates to address newborn asphyxia by expanding their knowledge and skills in newborn resuscitation techniques and state-of-the-art newborn care interventions. In collaboration with the USAID-funded Africa’s Health in 2010, the AAP, Laerdal Foundation for Acute Medicine,

RCQHC in Kampala, and ECSACON, this two-day training workshop aimed to create national and regional trainers for the HBB initiative, and support the expansion of programs for neonatal resuscitation within the context of essential newborn care.

* * *

A detailed agenda for Part I is found in Appendix B; Part II's objectives and detailed agenda are found in Appendix E.

It is expected that this Meeting will assist country programs, donors and governments in developing comprehensive and innovative programs to address public health priorities in maternal and newborn health.

OPENING CEREMONY

The meeting was opened by Dr. Yassir Abduljewad, Deputy Country Director of Jhpiego Ethiopia, who welcomed all participants of the Meeting to Addis Ababa, the “capital of Africa.” It proceeded with welcome and remarks from organizers, funders and the host government.

INDIVIDUAL REMARKS

Dr. Koki Agarwal, Director of MCHIP, set the tone by highlighting the main goal of the Meeting—to improve the maternal and newborn health in African countries. The advent of the Meeting has generated enthusiastic response, said Dr. Agarwal, which underscores the importance of these issues. As the Meeting would represent a joint effort to reduce maternal mortality by focusing on major causes of maternal mortality, postpartum hemorrhage and pre-eclampsia/eclampsia, sharing ideas to improve and further research and interventions would be at the heart of it. Dr. Agarwal extended special thanks to USAID and the Bill & Melinda Gates Foundation for their generous support and guidance.

Ms. Becky Ferguson, of the Bill & Melinda Gates Foundation, expressed her delight to be part of the Meeting that would focus on three key causes of maternal and newborn mortality—PPH, PE/E and newborn asphyxia; she emphasized the importance to the MNCH community of sharing experiences. Ms. Ferguson communicated how proud the Foundation was to be part of the event, as well as its commitment to being a leader in the area of maternal and neonatal health. Ms. Ferguson closed her speech with a recommendation to the meeting participants to “focus on high-impact interventions.”

Ms. Mary Ellen Stanton, Maternal Health Team Leader at USAID, welcomed the participants on behalf of USAID and commented that the Meeting presented an opportunity to review evolving evidence and keep a spotlight on key interventions that will make a difference. Ms. Stanton underscored the notion that new policy work, including norms and guidelines, is moving in the right direction, but that there remains a need for better indicators to monitor high-impact interventions.

Her Excellency Advocate Bience P. Gawanas, Commissioner of Social Affairs, Africa Union, proudly spoke about Addis Ababa’s being the capital of Africa, where the African Union is based. She applauded the Meeting organizers for bringing the latest developments in maternal and newborn care to Africa. For the African Union Commission, said H.E. Adv. Gawanas, maternal health is a high priority, as was demonstrated at the Kampala Summit “Maternal, Newborn and Child Health and Development in Africa,” held in July 2010. The Maputo Plan of Action, adopted at the Summit, aims to improve reproductive health conditions for millions of women across the continent through providing sustainable financing, improving integrated health services and systems, and monitoring and evaluation. Also, H.E. Adv. Gawanas highlighted the Campaign for Accelerated Reduction of Maternal Mortality in Africa (CARMMA), allocated at national level in 24 countries, which brings maternal health to the center of attention in the country and encourages governments to improve the maternal health situation and translate policy into action. This campaign is “Africa owned and African led,” she said—promoting good practices and encouraging and intensifying action. Support is needed for the CARMMA campaign, explained H.E. Adv. Gawanas, who then identified Meeting participants as the people on the ground who can make a difference. The causes of maternal mortality are well known, she reiterated; we need to come up with guidance for interventions to address them. She closed her speech with a moving sentence: “Africa cares. No woman should die while giving life.”

Honorable Ambassador Michael Battle, US Ambassador to the African Union, congratulated the Meeting organizers for leadership and passion for improving health of women and children in Africa.

Maternal deaths in Africa are unacceptably high, said Mr.

Battle. The US government supports global health initiatives aimed at improving health outcomes for women and girls and calls for more engagement of women and girls in education and economic development. Commenting on the previous speaker, Mr. Battle noted that CARMMA represents high-level commitment to improvement of health of nations; he said that the US government supports the CARMMA campaign and looks forward to ongoing partnership with the African Union for CARMMA.

“Africa cares. No woman should die while giving life.”

H.E. Adv. Bience P. Gawanas

Dr. Kesete Berhan Admasu, State Minister, Ministry of Health of the Federal Democratic Republic of Ethiopia, welcomed the participants of the Meeting to Addis, the capital of Africa and “cradle of mankind.” Dr. Kesete Berhan Admasu highlighted that the Ministry of Health stays very committed to improving health of mothers, children and newborns and achieving the Millennium Development Goals (MDGs). The next five years will be focused on improving the quality of care; special attention will be given to maternal and neonatal care, he explained, as the recent assessment of emergency maternal care demonstrated enormous gaps. The Ministry of Health, Dr. Kesete Berhan Admasu continued, has a clear action to address those gaps through procuring ambulances, distributing magnesium sulfate, and establishing mandates to allow health workers to use misoprostol, oxytocin and other drugs available at health facilities.

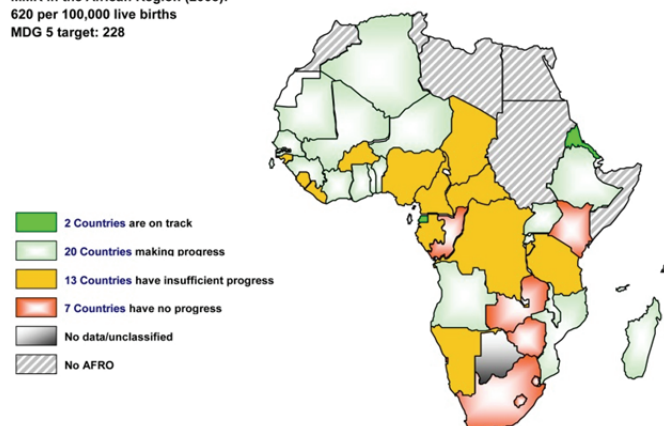
KEYNOTE ADDRESS: MATERNAL AND NEWBORN HEALTH IN THE AFRICAN REGION

Dr. Pyande Mongi, representing WHO/AFRO, delivered the keynote address. She focused on the somber facts of maternal and neonatal health in Africa, the coverage for the key interventions and the way forward.

Sub-Saharan Africa has dramatically higher maternal mortality ratios than any other part of the world—three out of five maternal deaths globally occur in Africa. Most countries are not on track to meet MDGs 4 and 5: the maternal mortality ratio in Africa is currently 620, while the MDG calls for a ratio of 228 or less. Newborn mortality is holding back progress on MDG 4 in many countries: 1.16 million newborns die in the first month of life in Africa. Eritrea and Equatorial Guinea are the only two African countries on track to meet MDG 5, and seven countries have made no progress toward meeting the MDG. Figure 1 shows progress toward MDG 5 by countries in the region.

Figure 1. Progress toward MDG 5 by Country

MMR in the African Region (2008):
620 per 100,000 live births
MDG 5 target: 228



“But we know who is at risk, where they live, what we must do and how to do it!”

Pyande Mongi, WHO/AFRO

Of maternal deaths, 75% are directly due to obstetric complications; delays in decision-making at all levels and transportation to facilities are also contributing factors. According to the WHO World Health Statistics, coverage of key interventions for maternal and newborn health (MNH) is very low, especially in the first hours and days and hours when mothers and newborns are most at risk.

The inequities based on social and economic status, as well as geographic location, are great. Further disparities exist between urban and rural settings. For example, in Ethiopia, only 6% of women have access to skilled care; among them, urban women have far more access than rural women. Furthermore, there is striking inequity in accessing midwifery care, with poor women getting only limited services; this means that the national figure of the skilled birth attendant coverage reflects the higher access of the country's rich populations. Mothers' education is also a contributing factor to access to services.

To address the maternal and newborn health situation, the Ministries of Health of the Africa Region adopted the MNH Roadmap in 2004, and the CARMMA campaign was launched in 23 countries. WHO/AFRO Strategic Directions 2010–2015 includes putting the health of mothers and children first. As the next step, the African Union Summit in July 2010 in Kampala announced the regional commitment to improve maternal and neonatal health.

But, despite all of the efforts and commitment of governments and partners, challenges remain in government and leadership, health systems, infrastructure, funding and overall coordination. Very few countries have the necessary resources and support to fully implement their MNH Roadmaps toward universal access to key interventions. We don't have a lot of resources and we aren't getting the most for our money.

But we know who is at risk, where they live, what we must do and how to do it. To move forward, we need to scale up the most effective interventions to achieve our goals—with a special emphasis on skilled birth attendance. Solutions to improvements in maternal health include: increasing access to skilled birth attendants; scaling up emergency care and family planning; strengthening linkages between HIV and reproductive health, malaria and maternal care; and empowering women. Solutions to improvements in newborn health should focus on low-technology interventions and include better breastfeeding practices, warming, appropriate hygiene and cord care, along with having skilled health care attendance for mothers and babies at delivery and during the immediate postpartum period.

The WHO plays a significant role in generating and implementing solutions through advocacy, policy strategy and development, and capacity-building. We use advocacy to increase funding and ensure better use of it. The policy strategy and development includes decentralization, health care financing, integrated MNCH service delivery, and human resource development. And capacity-building is focused on ensuring the availability of skilled birth attendance and emergency obstetric and newborn care.

We have a shared responsibility to reach all mothers with the services they need!

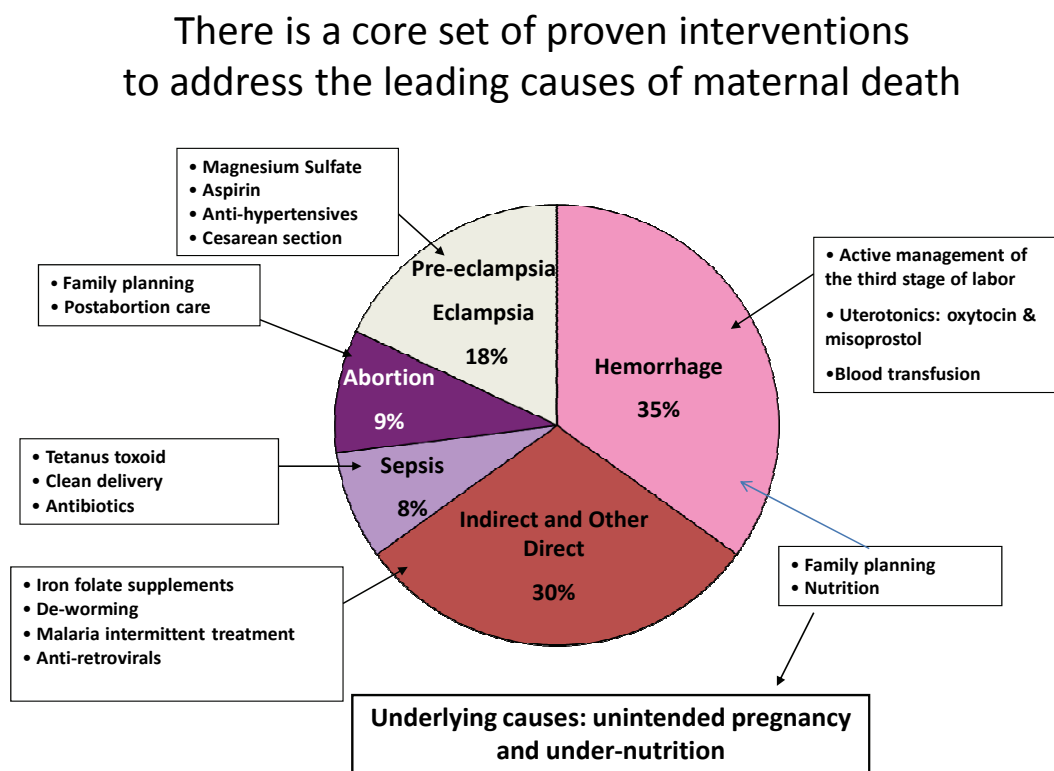
PART I: INTERVENTIONS FOR IMPACT IN OBSTETRIC HEALTH

Severe bleeding after childbirth (postpartum hemorrhage, or PPH) and complications that arise from uncontrolled increase of blood pressure (pre-eclampsia/eclampsia, or PE/E) are the most common causes of maternal mortality in developing countries. Research shows that the majority of maternal deaths in developing countries are due to PPH and PEE (Figure 1).

These deaths are tragic; they also could be prevented. Increasing evidence shows that simple, cost-effective, low-technology interventions can significantly decrease the number of maternal lives claimed by PPH and PE/E (Figure 2).

Day 1 of the Meeting was devoted to discussions of the evidence and recommendations for PPH prevention and treatment at the facility and community levels. Information on the presenters is provided in Appendix C.

Figure 2. Main Causes of Maternal Death and Interventions to Address Them



Source for Causes: Countdown to 2015

Plenary Sessions

REDUCING MATERNAL MORTALITY DUE TO POSTPARTUM HEMORRHAGE (PPH)

A leading cause of maternal mortality in the world, hemorrhage contributes to one of every three maternal deaths (1997–2007). And women in the developing world are particularly vulnerable—14 million women (or 26 every minute) experience PPH there annually.

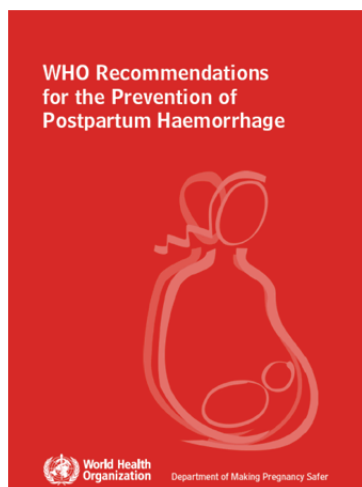
Postpartum hemorrhage (PPH) is commonly defined as blood loss >500 mL in the first 24 hours after delivery and severe PPH is loss of 1000 mL or more. Although PPH is preventable and treatable, it is unpredictable and requires rapid care to prevent life-threatening consequences. Nearly half of all postpartum deaths are due to immediate PPH; a woman may die from hemorrhage in as little as two hours of onset if she does not receive proper treatment.

Day 1 of the Meeting was devoted to discussions of the evidence and recommendations for PPH prevention and treatment at the facility and community levels.

Panel #1: New Evidence for Prevention and Treatment of Postpartum Hemorrhage. Moderator: Koki Agarwal, MCHIP.

New Guidance on PPH Prevention and Management

Matthews Mathai, representing WHO/Geneva, described the latest WHO recommendations for the prevention of PPH and guidelines for its management.



PPH is the principal cause of maternal death in Africa, and there was an increasing demand for guidance on misoprostol use in African countries for prevention of PPH. WHO convened two meetings on prevention (October 2006) and management (November 2008) of PPH, which resulted in the development of recommendations for prevention of PPH (2007) and guidelines for treatment of PPH and retained placenta (2009).

The WHO recommendations for prevention of PPH state that oxytocin is the preferred uterotonic, and that active management of third stage of labor (AMTSL) by skilled attendants should be offered to all women to prevent PPH. Misoprostol is less effective than oxytocin and has more adverse effects, and ergometrine may be used if oxytocin is not available but should be avoided in women with hypertension and heart disease. In the absence of personnel to offer AMTSL, trained health workers should offer 600 mcg misoprostol orally immediately after birth of the baby. In such cases, no active intervention to deliver the placenta should be carried out.

For management of PPH due to uterine atony, evidence from PPH prevention studies suggests that oxytocin is preferable to other uterotonics. If oxytocin is not available or if bleeding continues, ergometrine or fixed-dose combinations (FDC) of oxytocin and ergometrine are recommended. If this second-line treatment is not available or if bleeding continues, a prostaglandin should be used as third-line treatment.

Part I: Interventions for Impact in Obstetric Health

In women who have received oxytocin during the third stage of labor, oxytocin alone should be used (moderate-to-high quality strongly recommended). Studies did not find added benefit of misoprostol as adjunct treatment. In women who have not received oxytocin for PPH prevention, oxytocin alone should be offered for treatment (moderate-to-high quality strongly recommended). Oxytocin has higher effectiveness than other uterotonics with fewer side effects. WHO recommends making oxytocin available where it is currently not offered. Misoprostol may be used if no other uterotonic is available but the safest dose is not yet clear.

Other recommendations for treatments for PPH include:

- Uterine massage—start when PPH is diagnosed
- Bimanual uterine compression and external aortic compression as temporizing measures
- Uterine packing is not recommended!
- Intrauterine balloon/condom tamponade—if no response to uterotonics or if uterotonics are not available

There is currently no recommendation on the anti-shock garment. A trial is ongoing. The WHO does not recommend distribution of misoprostol to community-level health workers or women and their families for routine or emergency use. WHO recommends research at the community level to investigate how PPH can be managed effectively at this level.

The next update of WHO guidance on PPH prevention and treatment is planned for 2012.

Updates on Use of Misoprostol for Prevention and Management of PPH

Dr. Beverly Winikoff, President of Gynuity Health Project, described results of two double-blind, hospital-based studies to assess use of misoprostol as first-line treatment, and discussed the recommendations for misoprostol use for prevention and management of PPH.

Misoprostol is safe, affordable, easy to administer and logistically appropriate in many settings. The perception of misoprostol is changing from that of an abortion drug to that of a maternal health drug. Studies have shown that misoprostol reduces PPH with 24–25% efficacy, compared to placebo. It is safe and effective for PPH prevention in community settings; providers at all levels can be trained to use it. Oxytocin is preferred, but misoprostol can fill gaps—particularly in rural areas.

Because misoprostol does not require refrigeration, there are obvious logistical advantages for its use in community settings. Currently, in fact, misoprostol may be the only PPH prevention option that is feasible. Therefore, it should be recommended as a safe and effective alternative intervention for use at home deliveries and in low-resource settings where injectable oxytocin is not available or not feasible. There are no published comparative studies between misoprostol and oxytocin in primary health centers (PHCs) or home delivery settings. Misoprostol can be used for PPH treatment as:

- First-line treatment after prophylactic uterotonic
- First-line treatment after no prophylaxis
- Adjunct treatment (with oxytocin)
- Last resort
- Secondary prevention/early liberal treatment

Misoprostol as a first-line treatment: To assess the use of misoprostol as a first-line treatment for PPH, two double-blind, hospital-based studies were conducted to compare 800 mcg sublingual misoprostol and 40 IU intravenous oxytocin for the treatment of PPH after: (1) oxytocin prophylaxis in third stage of labor, and (2) no oxytocin prophylaxis. Results showed that with oxytocin prophylaxis, misoprostol worked similarly to IV oxytocin; without oxytocin prophylaxis, oxytocin worked slightly better than misoprostol (96% vs. 90%). Conclusion: Misoprostol is a good alternative when oxytocin is unavailable or not feasible to use.

Misoprostol as an adjunct treatment: Significantly more fever has been observed when misoprostol is added to oxytocin. Therefore, there appears to be no reason to combine the two drugs as there is no added benefit and more side effects.

Misoprostol as a last resort: There is little evidence on efficacy of misoprostol as a last effort to save a woman's life; while it is not ethical to conduct a study on this, the possible positive effect probably outweighs the limitations, particularly in low-resource settings.

Misoprostol as a secondary prevention/early liberal treatment: To use misoprostol as a secondary prevention or early treatment, a number of key questions should be discussed: Is universal prevention needed? Do the costs outweigh the potential benefits? Does universal prevention save lives? Would early treatment for some women be more effective both clinically and programmatically versus prophylaxis for all?

Many questions are still unanswered, especially those around the comparable effectiveness of misoprostol and oxytocin for prophylaxis and treatment, the appropriate dosage for lower level facilities and home births, and the effectiveness of misoprostol as a prophylaxis for PPH treatment. Working to address these issues will bring about new recommendations based on recent evidence and broader consensus on recommended dose, route and use of the drugs.

Gynuity Health Projects is implementing a five-year grant from the Bill & Melinda Gates Foundation to answer remaining scientific questions around PPH and misoprostol and to develop the policy approaches best suited to making this lifesaving technology available to women.

Updates on New Technologies for Management of PPH

Dr. Sylvia Deganus, from Tema General Hospital, Ghana Health Services, spoke on the new technologies for management of PPH.

PPH accounts for 25% of maternal deaths—more than any other cause. More than half of PPHs occur within 24 hours of childbirth, but it is difficult to predict who will experience PPH, even based on risk factors. New technologies for management of PPH include drapes for measuring blood loss, balloon tamponade, anti-shock garments and new surgical methods.

Drapes: Prompt recognition of an emergency situation (hemorrhage) is often challenging as blood loss is difficult to measure accurately; it can happen very quickly and delays can be costly. Visual estimates of blood loss are far from accurate. In the past, pans and other primitive means were used to collect blood. The Brass-V drape is a low-cost, plastic blood collection drape that is accurate and easy to use. It also can be used in wide variety of settings.

Balloon Tamponade: Using a latex balloon inserted into the uterus to stop the bleeding by applying pressure to the uterine wall is another promising technology that can effectively be used in low-resource settings. (The balloon is filled with 250 to 500 mL with normal saline or water; when bleeding is reduced, the technician stops further inflation.) The balloon tamponade

has proven very effective ($\geq 85\%$) when uterotonics fail, is easy to use and reduces the need for hysterectomy. The cost is between \$77 and \$250. A condom tamponade (a low-cost variation of the balloon tamponade), however, has a total cost of about \$5. Figure 3 provides a detailed illustration of this cost-effective alternative.

New Intra-Operative

Techniques: These include uterine compression sutures, arterial ligation/pelvic devascularization, selective arterial embolization and use of topical hemostatic agents. They control bleeding by tamponade compression of the uterus or by reducing blood flow to the uterus.

Non-Pneumatic Anti-Shock Garment (NASG):

This simple device counteracts shock and decreases blood loss by applying direct counter-pressure to the lower parts of the body. It was developed by NASA over 20 years ago, and is useful as a first aid tool that helps to keep a woman alive during prolonged transportation to reach help, providing stability for up to 48 hours. The device itself, consisting of neoprene segments with Velcro® closures, can be easily applied within 2 minutes by persons with minimal training.

There is a need to disseminate information about the availability of these new technologies to prevent and manage PPH, as well as a need for further researching them—to develop more evidence for their use and promotion. Most of these technologies will work best where facilities are already prepared with EmOC infrastructure and skills.

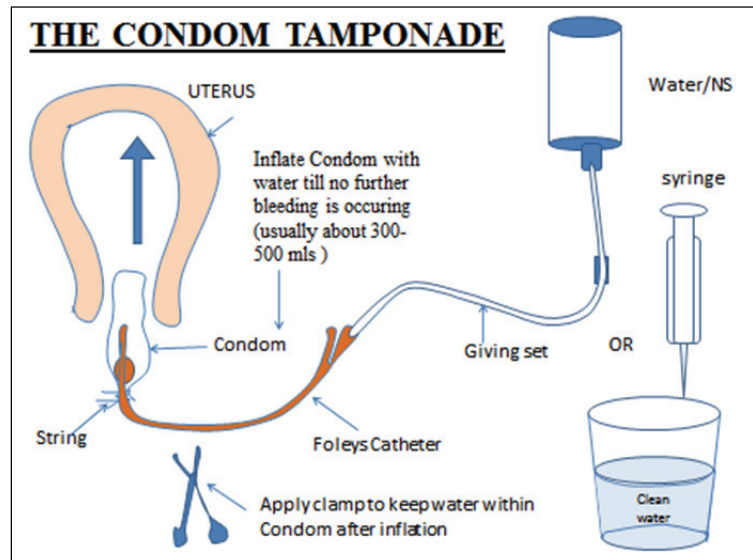
Landscape Study of Use of Uterotonics in Ghana

Patience Cofie, Research Coordinator at PATH, presented findings of the study on use of traditional pharmaceutical uterotonics in births and assessment of availability of valid medication in Ghana, and summarized recommendations that came out of these findings.

This study, conducted in 2010, was supported by the Oxytocin Initiative and managed by PATH with funding from Bill & Melinda Gates Foundation. The study: (1) explored the knowledge, perceptions and usage patterns of uterotonics around childbirth; and (2) assessed the chemical potency of uterotonics in Ghana, specifically a sample of ampoules of oxytocin and ergometrine purchased through private pharmacies, chemical sellers and markets in Ghana. The study design included in-depth interviews with health providers and community representatives and incorporated a stimulated client approach of purchasing the drugs.

The study found that place of labor and delivery is influenced by previous and current complications experienced by women during childbirth and is a strong predictor of birthing practices, particularly uterotonic use. There was no evidence of pharmaceutical uterotonic use in communities and no evidence of traditional (herbal) uterotonic use in health facilities.

Figure 3. Condom Tamponade for Treating PPH



The study produced the following key findings and recommendations:

- Among midwives, knowledge of the risks associated with uterotonics and appropriate dosages is inconsistent. Some midwives administer oxytocin to augment prolonged labor. Also, doctors are often unavailable or inaccessible to prescribe a uterotonic, so mid-level providers are forced to make a decision regarding course of treatment independently.
Recommendation: Training, supervision and monitoring of midwives in both AMTSL and PPH treatment—should be strengthened.
- Traditional birth attendants (TBAs) and new mothers are unaware of the risks associated with use of traditional substances during pregnancy and labor. An enormous variety of traditional substances are used throughout this period; the indications for their use vary and are unclear—with very little consistency regarding which substances are to be used in a given situation, by what route, and with what dosage and frequency.
Recommendation: Behavior change communication programs should be launched at the community level using both mass media and traditional channels—targeting mothers, TBAs and traditional/community leaders.
- The majority of available pharmaceutical uterotonics (oxytocin and ergometrine) at the peripheral level are of poor quality. None (0%) of the ergometrine samples met potency specifications (with active ingredient level between 90% and 110% of the specified level; only 26% of oxytocin ampoules met specifications (90–110%). However, only 4% of oxytocin ampoules and none of the ergometrine ampoules were expired.
Recommendations: Based on findings, the following actions are warranted:
 - Further market surveillance and testing of uterotonic drug quality
 - Investigation of and improvements to transportation, distribution and storage of uterotonic drugs
 - Enforcement of regulations on sale of uterotonic drugs (oxytocin and ergometrine) by the Ghana Pharmacy Council

A general discussion that followed the presentations focused on issues regarding midwives and their role in the use of uterotonics. Another topic for a short discussion was misoprostol and the research needed to move it forward in the fight against PPH: specifically, there is a need for more evidence and experience with its use, upon which WHO can develop its recommendations. Also, more information was requested on traditional uterotonics and behavior change communication strategies for use at the community level.

Panel #2. Overcoming Programmatic Barriers to Implementing PPH Prevention at the Facility Level. Moderator: Alice Levisay, Oxytocin Initiative.

Postpartum Hemorrhage Prevention: Benin Experience

Dr. Aboudou Mama Sèni, representing the Ministry of Health of Benin and the Hôpital de la Mère et de l'Enfant – Lagune (HOMEL), where she is the Chief Medical Officer, spoke about the process of introduction of AMTSL at the national level, described results and discussed factors that contributed to success.

In Benin, issues of maternal health have national attention. EmOC was implemented in 1999, AMTSL was introduced in 2003 and, in 2009, a joint statement for prevention of PPH was signed by midwifery and obstetrics/gynecology (ob/gyn) associations. Because professional

associations in Benin have had good experiences working together, a national-level action plan was developed to guide the integration of AMTSL with existing clinical guidelines. With the incorporation of AMTSL in patient care, PPH incidence and, subsequently, maternal deaths were reduced. Two studies to assess benefits of AMTSL initiated in Benin validated international studies. The PPH study conducted at the Hôpital de la Mère et de l'Enfant – Lagune “Mother and Child Hospital” (HOMEL) showed significant reduction in maternal deaths: from 6,628 PPH-related deaths when AMTSL was not used to 21 deaths with use of AMTSL.

Training of providers was of the most importance in the introduction of the new practices. Training of trainers (TOT) followed by training of providers and integration of AMTSL with the pre-service curriculum were the steps toward improvement of services. Currently, 97% of health zones (33 out of 34) in Benin have trained providers; a total of 2,461 providers were trained in AMTSL using humanistic and competency-based approaches.

Other components of success include active coordination and collaboration with partners, strong support from the national and zonal budget, rational use of fellowships that provided training opportunities at no cost to providers, structured monitoring and evaluation of services, and training of supervisors. Another very important factor was the readiness of the MOH to provide strong support for the PPH prevention agenda, involving both public and private sectors.

Overcoming Provider Barriers to Introduction and Sustainability of AMTSL at Facilities

Susheela M. Engelbrecht, representing PATH and the Oxytocin Initiative, discussed determinants of the use of AMTSL in a facility, described three interventions that address facility-based provider-related barriers to introduction and/or sustainability of AMTSL in facilities, and explained successful interventions for improving sustainability of AMTSL in facilities in a given country.

Active management of third stage of labor (AMTSL) is defined as combination of three steps: (1) administration of a uterotonic drug within 1 minute of birth of the baby, (2) controlled cord traction with counter-pressure to support the uterus, and (3) immediate uterine massage following delivery of the placenta—with evaluation of uterine tone and repeat massage at least every 15 minutes for at least 2 hours. Early cord clamping (defined as clamping immediately after birth of the baby) is not part of the ICM/FIGO definition of AMTSL.

The USAID-funded Prevention of Postpartum Hemorrhage Initiative (POPPHI), led by PATH, conducted 10 national surveys in 2007 showing that while providers used uterotonic drugs relatively consistently during third and fourth stages of labor, very few actually administered them within the first minute after birth to prevent PPH (less than 30%).

The program identified a number of facility-based provider-related barriers to introduction and/or sustainability of AMTSL in facilities: (1) Policies may prevent certain cadres from applying AMTSL; (2) Providers may either not be trained or not be consistently trained in the procedure; (3) AMTSL may not be integrated with supportive supervision activities; (4) There may not be indicators for AMTSL and uterotonic drugs to monitor progress; (5) Uterotonic drugs may not be consistently available due to logistical problems; and (6) Uterotonic drugs may not be stored correctly, making them and thus AMTSL less effective. To address these barriers, there is a need for: (1) Policies that promote application of AMTSL by all birth attendants in the facility; (2) Training activities that ensure that at least 80% of the population of birth

attendants apply AMTSL consistently and competently; (3) Internal and external supervisory systems that monitor the practice; and (4) Indicators to follow progress.

Examples of successful interventions to address provider-related barriers to sustainable introduction of AMTSL include: (1) Changing AMTSL Behavior in Obstetrics (CAMBIO)—development and dissemination guidelines at the facility level, training and monitoring, use of reminders and job aids—in Argentina; (2) Self and Individual learning (SAIN)—training of mentors/clinical instructors at each facility, use of a learning approach that combines self-directed learning and clinical practicum under supervision at the facility level, wall charts to monitor AMTSL coverage, and job aids—in Ghana and South Africa; and (3) Intensive post-training supervision and peer training in Democratic Republic of Congo (DRC.)

A wealth of information on PPH prevention and management can be found on the POPPHI Web site: www.pphprevention.org.

Overcoming Barriers to Implementing PPH Prevention at Facility Level: The Role of Professional Associations

Dr. Sabaratnam Arulkumaran, Professor and Head of Obstetrics & Gynaecology, St. George's University of London and President Elect at FIGO, described success stories of professional organizations that have worked to reduce barriers to access interventions to prevent and treat PPH, provided recommendations for country professional organizations, and listed major challenges and solutions for professional organizations to overcome barriers to implementation of interventions for PPH control.

The role of professional associations in the prevention and treatment of PPH is to provide leadership on issues surrounding PPH, advocate for PPH control initiatives, support research to update clinical practices, promote best practices, facilitate knowledge and skill transfer, and support efforts to assure quality. There are many examples of successful collaboration—such as the partnership of FIGO and International Confederation of Midwives (ICM) in the Prevention of Postpartum Hemorrhage Initiative (POPPHI)—that have resulted in new strategies to promote: (1) expansion and improvement of the quality and availability of AMTSL at the facility and community levels; (2) use of best practices and creation of new learning materials and job aids; and (3) the development and signing of joint statements for work with their member associations around the world. FIGO is collaborating with global partners on PPH reduction and has expanded to address PE/E as well. FIGO, ICM and MCHIP will be working together on a program to build collaboration of midwives and obstetricians for implementation of key interventions in numerous African countries.

FIGO's contribution to the global effort to address PPH includes development of a joint statement (FIGO/ICM) on active and physiological management of postpartum hemorrhage, as well as the production of guidelines, models and job aids for prevention and treatment of PPH. Joint statements are very effective in advocacy efforts, as they: define the public health problem; describe best practices that should be promoted to screen for, prevent and manage the problem; and spell out necessary actions that governments should take to address the issue. They also can be used in the development of clinical guidelines and national action plans. Professional associations may also influence change by advocating on all levels and directly promoting best clinical practices through active collaboration with the MOH and medical and midwifery schools in the curricula-development process. Good examples of such collaborations exist in DRC and Mali.

While many country-based professional associations still experience challenges ranging from not having legal standing in the country to not having sufficient funding to carry out activities, there are steps they can take to be able to offer input in the national health efforts. These include seeking funding to support research and training activities, promoting membership and developing champions, and strengthening their position by associating with the international professional associations.

A general discussion that followed the presentations focused on the following issues:

- How do blended learning and training time affect retention of information? As it is a complicated and time-consuming learning method, support of the learner is very important.
- How do we overcome political barriers to AMTSL scale-up? There are important issues surrounding the qualifications of SBAs and policy changes for uterotonics. Each country must analyze its own situation. “Women are dying while we are arguing who is a skilled birth attendant,” said Dr. Arulkumaran.
- Aggressive marketing of misoprostol now seems to have overtaken oxytocin. Need aggressive marketing of Uniject as first-line treatment. If it becomes a national priority, the economy of scale can be reached. (Note: As a pre-filled, non-reusable injection device, the Uniject® [developed by PATH] “eliminates one route of disease transmission ...and ensures that the correct amount of drug is delivered and that none is discarded unnecessarily.”)

Panel #3: Experiences of Implementation of PPH Prevention and Treatment at the Community Level. Facilitator: Becky Ferguson, Bill & Melinda Gates Foundation.

PPH Prevention and Treatment in Africa Using Misoprostol at Community Level

Dr. Ndola Prata, Associate Professor and Bixby Scientific Director, University of California at Berkeley, spoke on considerations for PPH prevention and treatment on the community level, described studies that demonstrate the feasibility and effectiveness of use of misoprostol at home births and discussed how to prioritize program efforts at the community level.

There are widespread disparities in maternal indicators based on socio-economic status, including the MMR and access to skilled assistance and quality ANC and EmOC care. Countries with limited resources and populations in the lower quintiles are those that could benefit most from quality interventions for home births.

If a woman does not have regular access to quality ANC services and later to care during delivery at the hospital, it is important to prevent PPH at the community level—by filling the gap through utilizing existing resources and changing behaviors and practices. We need to look at misoprostol at the community level and to introduce quality interventions that support its use in this setting.

Critical considerations for PPH treatment at home birth include the following issues: Who is present at the birth (who can be reached/trained before the delivery)? How will women/family get the drug (distribution mechanism)? When is the drug administered and how is PPH identified (issues of blood loss measurement)? What is the route of administration?

A number of studies have shown the feasibility and effectiveness of the introduction of PPH treatment in the home birth setting. An operations research study in Northern Nigeria showed that distribution of misoprostol to women increases the safety of birthing at home. A study in Kigoma, rural Tanzania, that looked at the use and effectiveness of misoprostol for treatment of PPH at community level, showed that: (1) TBAs can effectively and safely administer the drug for treatment of PPH; and (2) this resulted in fewer women with cases of PPH requiring additional interventions after an estimated 500 mL of blood loss.

Misoprostol offers women the ability to deliver at home while being safer. It also allows TBAs to be present and assist with giving the uterotonic. We need to identify the best way to reach women through those who provide care for them during their pregnancy. Distributing misoprostol during ANC is a possibility, but there is a need for strong community awareness. We need figure out where to focus our efforts at the community level. Should it be prevention, treatment, or another intervention? We need to try to maximize safe birth at home through making as many interventions as possible available.

Programmatic and implementation strategies for effective misoprostol distribution at the community level should include the following: know the community; have an effective awareness campaign; integrate misoprostol distribution with community interventions; and improve services in delivery rooms.

At the policy level, there is a need for commitment to protect all deliveries from PPH through scale-up, proper allocation of human and financial resources, integration of PPH treatment in the package of maternal health services, and strong procurement practices at all levels of service.

When Active Management of Third Stage of Labor Is Not Possible

Karen Guillard, representing the International Confederation of Midwives, examined the evidence for the components of physiological management of the third stage of labor and discussed its use and components when uterotonic drugs are not available.

Active management of third stage of labor (AMTSL) is recommended as the primary method for prevention of postpartum hemorrhage, but what alternative methods are there if uterotonic drugs are not available? This presentation focused on examining the evidence for and defining the components of the physiological management of third stage of labor.

AMTSL country surveys (2007–2009) showed a wide difference in practices when uterotonic drugs were not used for third stage management. There is little conclusive research to define the components of physiological management of third stage; there is also considerable variation of opinion among countries and disciplines regarding what is considered a component of “normal” birth versus what is considered an intervention. Midwives, as the main practitioners of physiological management of third stage, also differ but have the most similarities.

ICM and FIGO formed an expert taskforce to look at physiological management and the standard of practice. ICM conducted a survey of current best practices; 39 ICM Member Association Countries responded. The surveys showed that there was consensus around signs of placental separation and how to support women to expel the placenta, and practices during the first two hours after birth. There was also consensus on the practices regarding the cord care: to **not** use controlled cord traction in the absence of uterotonic drugs and **not** clamp or cut the cord until after the placenta is delivered.

Recommendations for moving ahead include the following: the physiological management of third stage should be a common competency, and every birth attendant should be taught the ways to assist the woman during the third stage of labor; more research is needed around physiological management of third stage; and women need to be educated in self-care during labor.

PPH Prevention through Platform of Antenatal Care

Dr. Albert Kitumbo, of Ifakara Health Institute, Tanzania, described testing the model of misoprostol distribution during ANC visits, reviewed its results and discussed its implications for other programs.

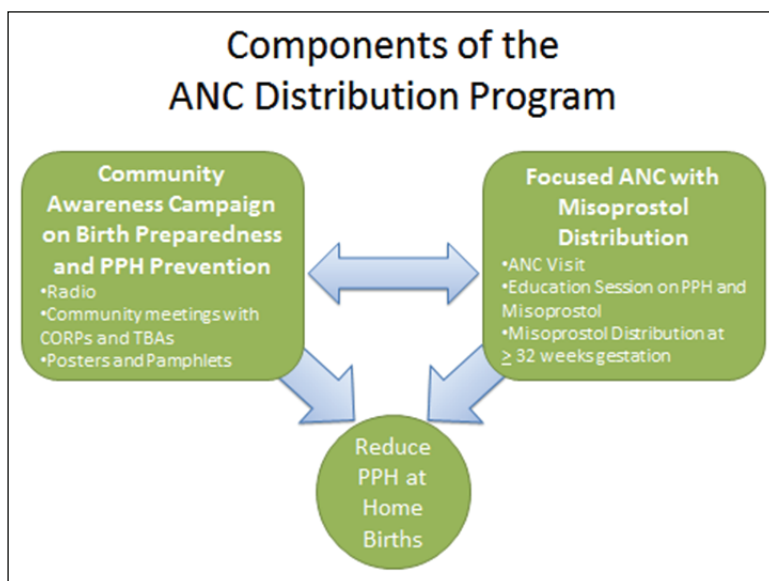
In Tanzania, 94% of women attend at least one ANC visit during their pregnancy, but 53% of women give birth outside of facilities. Misoprostol has been shown to be safe for preventing PPH at home deliveries. By educating women and distributing misoprostol during ANC visits, women who deliver at home will have access to this lifesaving technology.

Operations research to test the model of misoprostol distribution during ANC visits was conducted in four districts of Tanzania between January and December 2009, supported by Ifakara Health Institute, Venture Strategies Innovations (VSI) and Bixby Center at the University of California, Berkeley. The study provided evidence that:

- Women can safely self-administer misoprostol for prevention of PPH at home births after being educated on and receiving the drug at ANC visits,
- ANC visits are a feasible and effective means of distributing misoprostol for PPH prevention to women who cannot get to a facility to deliver and give birth at home, and
- Women and communities find misoprostol to be an acceptable means of preventing PPH at home births.

Figure 4 shows the components of a successful model of misoprostol distribution during ANC visits.

Figure 4. Model for ANC Distribution of Misoprostol



Based on the tested knowledge of women about PPH and birth, the program was highly effective. There was also a high level of acceptability of the intervention among women. The challenge revealed by the study was that not as many women return for an ANC visit after 32 weeks gestation, as was anticipated; thus, they did not receive misoprostol due to the gestational age requirement (32 weeks or more) to receive the drug for PPH prevention.

The results of this study suggest the following programmatic and

policy next steps: (1) Countries with similarly high rates of ANC visits and lower rates of facility

delivery should consider distribution of misoprostol during ANC visits; (2) The program should be scaled up by training all ANC providers to distribute misoprostol during ANC; and (3) The gestational age requirement for distributing misoprostol should be lowered or eliminated to increase coverage.

Clinical and Community Action: Pathfinder's Model to Address Postpartum Hemorrhage

Dr. Farouk Mohammed Jega, Program Manager with Pathfinder's Nigeria Country Office, spoke on Pathfinder's approach to reduction of maternal mortality and its key elements, and described application of the approach in the field.

Pathfinder developed its Clinical and Community Action Model to address the “four delays” that greatly contribute to maternal mortality. Delays 1–3 (recognition, decision and transportation) occur at the community level, while Delay 4 (quality, timely care at the health facility) is focused on the facility but also has a community component. The key elements of the Clinical and Community Action Model to address PPH are advocacy, clinical interventions and community engagement.

Advocacy interventions take on creating enabling policies for the introduction of innovations and new technologies and working with the government to address sustainability and take the model to scale. This effort involves pre-service and in-service training, recruitment and retaining health workers, equipment and supplies for EmOC, permission to work with TBAs, and other scale-up activities.

Clinical interventions focus on: (1) preventing, recognizing and managing PPH; and (2) ensuring relevant skills, equipment and supplies, and protocols at each level to support the continuum of care. Training activities include accurate estimated blood loss measurement, AMTSL and appropriate management of PPH (identifying the cause of bleeding to determine treatment; managing hypovolemic shock using a non-pneumatic anti-shock garment [NASG], IV fluid replacement, blood replacement and surgery including b-lynch technique).

Community engagement is key, focused on creating awareness on the danger signs and available interventions, establishing community-to-facility referral and transport mechanisms, and promoting birth preparedness.

The program works in five countries (Nigeria, India, Bangladesh, Tanzania and Peru), with different emphases on the three components. This model is complete, practical and adaptable and has resulted in significant reduction of PPH. While each element is valuable, the complete model—including all three elements—may have the most significant impact on maternal mortality. The model can be adapted for other causes of maternal mortality, such as pre-eclampsia and eclampsia, as well.

Panel #4. Quality of Care: Essential Obstetric Care. Moderator:
Yirgu Gebrehiwot, Ethiopian Society of Obstetricians and Gynecologists (ESOG).

Assessing the Quality of Services to Prevent and Manage Postpartum Hemorrhage: A Report from the MCHIP Quality of Care Survey

Linda Bartlett, Associate Scientist at the Bloomberg School of Public Health, Johns Hopkins University in Baltimore, Maryland, spoke on the Quality of Care Survey developed by MCHIP, described facility assessment tools and instruments, and reflected on the combined results of the survey in four countries.

Approximately half of all births in developing countries take place in facilities and yet the quality of maternal and perinatal care is unknown in many settings. The MCHIP Quality of Care Survey (QoC-MNC) was conducted to:

- Guide QoC-improvement activities for maternal and newborn care at facility, regional and national levels;
- Provide baseline estimates for countries to monitor improvements in care; and
- Develop indicators and data collection tools that can be used in multiple countries.

A general discussion that followed the presentations focused on the following issues:

- Whether there is a difference in outcome between distributing misoprostol at ANC visits in rural versus urban communities—While it is easier and more reliable to distribute and monitor in urban areas, it does not make a difference in the ultimate outcome.
- How to be sure that all of the women took the misoprostol when necessary—In the study, questionnaires were distributed and filled out after the birth by research assistants. They included questions about whether the woman took the drug and about the birth experience. One question that helped in determining whether the women had taken misoprostol was to ask about any side effects they experienced.
- How much misoprostol should be given at the community level and whether it is possible to reduce the dose of misoprostol in the study protocols to determine if lower doses would be as effective as the standard 600 mcg. (Note: It would be cheaper to use a lower dose. Also, there is some debate as to what dosage is safe; with a large-scale intervention, careful consideration should be given to potential widespread side effects when determining dosage amount.) Reducing the dose is a good idea but it has not been done very often because of the “standard” set by previous studies (using 600 mcg misoprostol). Also, it would be difficult to convince countries to have a clinical trial of misoprostol at doses that have not already been established/studied, although there is no reason why this might not change in the future.

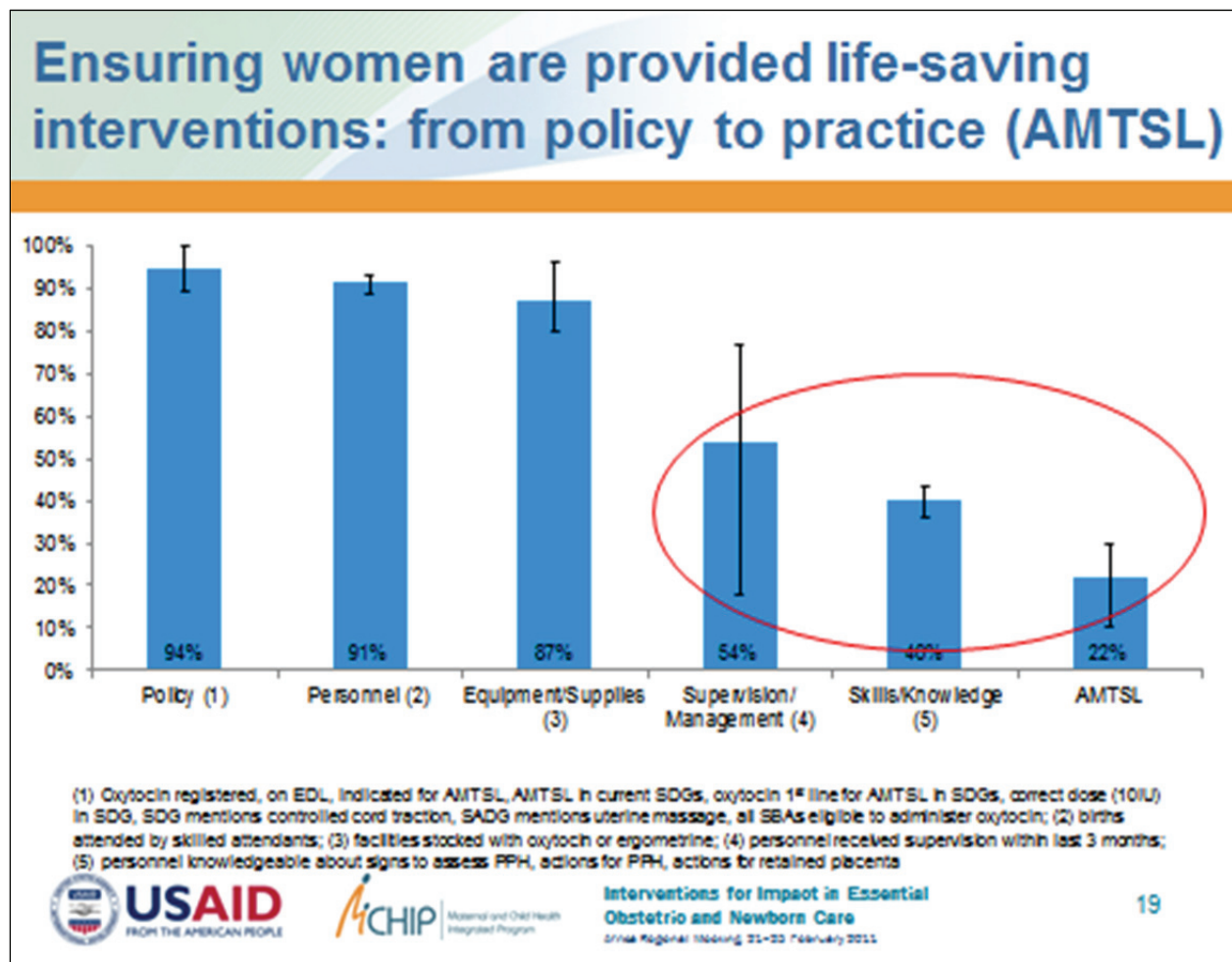
The survey introduced a facility assessment toolkit with eight data collection instruments to assess the quality of care for prevention, identification and management of common serious maternal and early neonatal complications. The survey was modeled after the AMTSL survey, with a special focus on pre-eclampsia/eclampsia, postpartum hemorrhage, prolonged/obstructed labor, sepsis, essential newborn care and resuscitation. It was conducted in Ethiopia, Kenya, Tanzania, Zanzibar, Rwanda and Madagascar (2009–2010), and will be conducted in Zimbabwe (planned for 2011).

The survey can be done as a stand-alone activity, or embedded in other facility assessment or readiness surveys, such as Service Provision Assessments (SPAs) developed by ICF MACRO. It can also be done using personal digital assistants (PDA) for data entry and analyses or by traditional paper and pencil. A single survey takes about two months to complete.

The combined results of surveys in four countries (Ethiopia, Tanzania, Rwanda and Madagascar) show that: preventive and risk-screening practices in ANC are low (22–46%); knowledge/skill scores of providers are low (39–46%); harmful practices are also low but should be none. In the policy-to-action cascade for AMTSL, higher-level interventions are frequent, whereas translation into actual practices on the frontlines is low. The relationship among the components of AMTSL services is shown in Figure 5.

While there are some strong areas in quality of care, many areas can be strengthened. The next steps suggested by the results of the surveys include: (1) development of country-specific and overall reports and plans for how to respond, with interventions focused on the frontline, pre-service and in-service education, and quality improvement, and (2) research on gaps identified, including efforts to understand the disconnect between levels of the “cascade” and to determine the dose and timing of uterotonic as the minimal effective intervention for PPH prevention.

Figure 5. Status of Policy-to-Practice Components for Preventing PPH



Emergency Obstetric and Newborn Care Assessments in Africa: Focus on Postpartum Hemorrhage and Pre-Eclampsia/Eclampsia

Dr. Koyejo Oyerinde, representing the Averting Maternal Death and Disability Program (AMDD) at the Department of Population and Family Health, Columbia University, described a series of cross-sectional, facility-based assessments of PPH and PE/E in Africa, discussed their findings and shared examples of positive changes in countries with political will.

The Averting Maternal Death and Disability Program (AMDD) works to strengthen health systems to provide emergency care for all women experiencing life-threatening obstetric complications; conducts research and policy analysis; provides technical expertise and advocates for solutions; and collaborates with global, regional and local institutions, including NGOs and academic centers. AMDD is part of the Mailman School of Public Health in the Department of Population and Family Health at Columbia University in New York City.

The EmONC Needs Assessments are cross-sectional, facility-based studies of the capacity of a health system to provide health services to mothers and newborns; they evaluate how well and to what extent a health system is providing EmONC and serve as a basis for development of indicators of the performance of health systems. The main focus of the assessment tools is elements of quality of care, including: accessibility, coverage and equity, availability of around-the-clock services, capacity and availability of human resources, equipment and supplies, and infrastructure. Countries customize tools to suit local needs for planning data.

Conducted surveys show chronic severe shortages of skilled birth attendants (SBAs) all over Africa; inadequate infrastructure, lack of linkages between tiers of the health system; poorly organized, nonexistent or ad hoc referral systems; and disabling policy environments. PPH is the leading cause of maternal deaths in Africa; PE/E is a close second, and is the leading cause in some countries. There are very low institutional delivery rates, especially in rural areas (Ethiopia 7%, Madagascar 19%, Sierra Leone 10%), with higher rates in urban areas.

Nevertheless, there are some positive trends, including increasing global focus and funding for MNH, such as the UN Secretary General's Global Strategy on Maternal and Child Health, and focus of the African Union Summit in Kampala in July 2010 on the MNH issues. Individual countries have also demonstrated political will to improve health of women and children. Sierra Leone, for example, made health services for pregnant and lactating mothers and children under 5 years of age free in spring 2010, and initial reports suggest a phenomenal increase in utilization. Madagascar has begun BEmONC training for midwives with emphasis on supportive supervision. And Ethiopia has instituted a new health management information system (HMIS) that captures major obstetric complications and performance of signal functions. Many countries are beginning to authorize midwives and nurses to perform all basic EmOC services (Nigeria, Ethiopia), and growing mobile-phone networks in most of Africa promise opportunities for remote patient care, supportive supervision and HMIS data capture.

Useful resources on prevention and management of PPH and PE/E are available on the AMDD Web site: www.amddprogram.org.

Tracking Scale-Up of Maternal and Newborn Health Interventions

Dr. Jeffrey Smith, Maternal Health Team Leader of MCHIP, described the conceptual map of the process of scaling up national programs to prevent and treat PE/E and PPH.

Scaling up of critical interventions in maternal and newborn health is important to make an impact on the health situation at the national level. We need data to understand the process of scaling up; we also need to capture and understand the methods of scaling up. For maternal health, we often lack country-specific data; only regional estimates are available. During this meeting, participants would be talking about country-specific situations. As such, country teams were asked to review their national situation in relation to PPH and PE/E before the meeting and to summarize it on a poster that includes a conceptual map that we called “a pathway to implementation of critical interventions and management at scale.”

These scale-up pathways will serve to organize data to inform national decisions for scaling up critical interventions. A pathway describes phases of implementation that are sequential in logic—not linear in time. It is an attempt to graphically represent the elements of a scale-up approach, meant to track progress over time. It is envisioned that these pathways will create a platform for national and international conversation about progress, as well as help to review practical scale-up processes and identify gaps in and opportunities for securing additional support/resources.

The pathway design includes phases of implementation and graphical representation of elements of scale-up approach, global actions, interventions, monitoring and evaluation, and degree of coverage. It presents information on national/country level and is not exhaustive. The template of the pathway for PPH and PE/E is presented in the Figure 6 (A and B); the posters presenting country-specific information on scale-up progress at the national level were displayed in the hall. All participants were encouraged to review and discuss the posters.

All country-specific maps of scale-up progress (i.e., progress on the pathway) that were developed as part of the preparatory exercise for this meeting, as well as review summaries, are included in Appendix D.

Figure 6A. Template for Conceptual Map of PPH Scale-Up

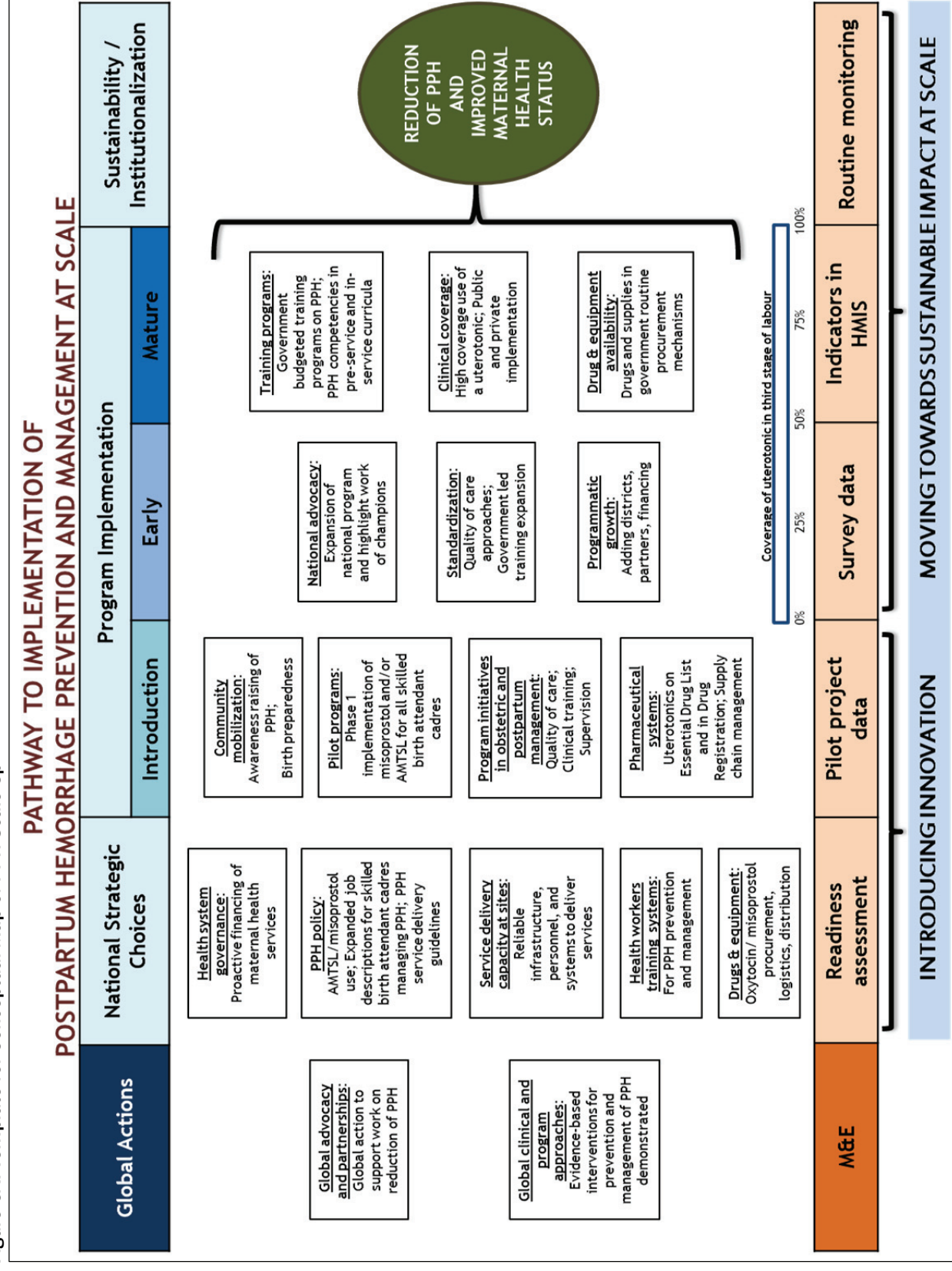
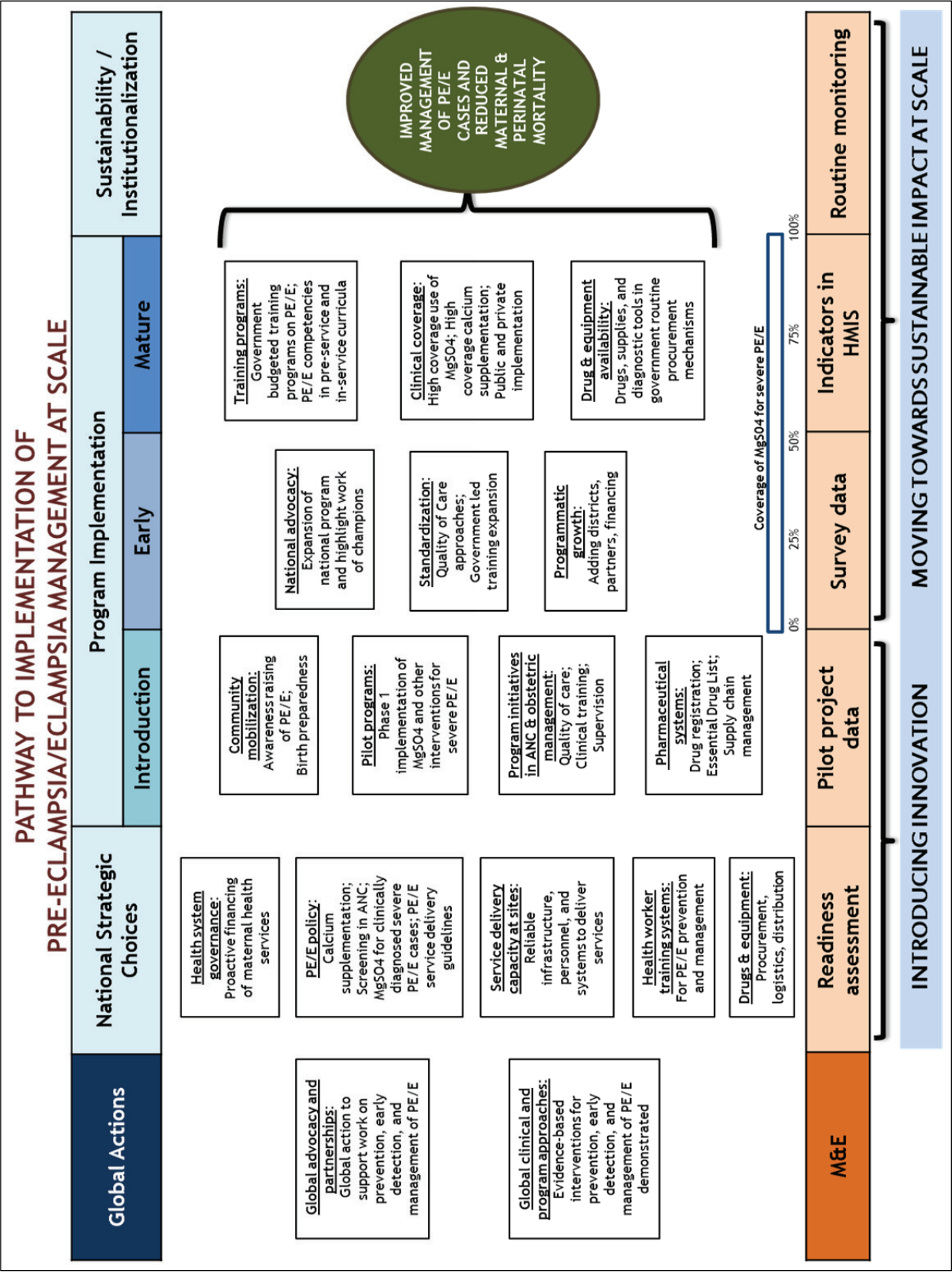


Figure 6B. Template for Conceptual Map of PE/E Scale-Up



UNDERSTANDING THE EVIDENCE: PREVENTING, DETECTING AND MANAGING PRE-ECLAMPSIA AND ECLAMPSIA (PE/E)

Pre-eclampsia, a life-threatening condition that may go undetected in pregnant women, is often called “a silent killer.” Pre-eclampsia is characterized by high blood pressure accompanied by a high level of protein in the urine, but without attention may go undetected and untreated. When pre-eclampsia is left untreated, it develops into eclampsia—the final and most severe phase of pre-eclampsia. Eclampsia can cause seizures, coma and even death of the mother and baby and can occur before, during or after childbirth.

In many African countries, pre-eclampsia/eclampsia is the leading cause of maternal mortality, often claiming as many women’s lives as postpartum hemorrhage, sometimes more. Day Two’s plenary sessions focused on existing evidence to prevent, detect and manage pre-eclampsia and eclampsia, and on cross-cutting issues—such as measurements and indicators to assist PPH and PE/E programming. The sessions closed with a call to action.

Burden of Pre-Eclampsia and Eclampsia in Ethiopia

Dr. Mengistu Hailemariam, Maternal Newborn Health Advisor to the Federal Ministry of Health, opened the session with an overview of maternal mortality in Ethiopia and its causes, described the burden of pre-eclampsia/eclampsia, and reflected on interventions needed for improvement of quality of care.

The latest statistic on the national maternal mortality ratio for Ethiopia is 470 (WHO 2008), almost double the Millennium Development Goal target MMR of 267. While approximately 3 million pregnancies are expected annually, 25% of maternal mortality is due to hemorrhage and 12% hypertension; other causes are obstructed labor (20%), unsafe abortion (13%), and sepsis (15%) and other causes (15%).

There is no national study on PE/E, and health institutions’ studies are scarce. Retrospective review of the six available studies on hypertensive disorders of pregnancy (1966–2007) demonstrated that 74.7% of the affected women were younger than 30 years of age and that 73.8% of pregnancy disorders were severe PE/E. Diazepam was used in the majority of cases for management of PE/E, and mortality in cases of severe PE/E reached 23.8%.

Ethiopia has identified PE/E as one of the major causes of maternal mortality and is working on improvement of the main components of quality health services. These include capacity-building (ensuring pre-service and in-service training for health providers to detect and manage PE/E, including magnesium sulfate in the national obstetric service guidelines), logistics (making supplies available to health facilities for management of PE/E), and supportive supervision and mentorship with the Obstetrics & Gynecological Society and other partners.

Panel #5. Evidence for Prevention and Detection of Pre-Eclampsia. Moderator: Nahed Matta, USAID.

Calcium Supplementation for Preventing Pre-Eclampsia/Eclampsia

Justus Hofmeyr, representing the Calcium and Pre-Eclampsia (CAP) Study Group of the University of the Witwatersrand and the Eastern Cape Department of Health, South Africa, spoke about association of dietary calcium with rates of pre-eclampsia/eclampsia and ways to ensure sufficient levels of calcium to prevent PE/E.

In 1962, a *Lancet* article described the “astonishingly low” incidence of pre-eclampsia (0.75%) in Ethiopia, attributed to a diet rich in calcium and iron and low in carbohydrates (Hamlin 1962). A study conducted between 1994 and 1999 in Ethiopia found eclampsia at the level of 7.1/1,000 deliveries, with a case fatality rate of 13%. This increase in eclampsia may have been due to a change in diet that had reduced calcium and increased use of carbohydrates (Abate and Lakew 2006).

A growing body of evidence shows that calcium supplementation in the second half of pregnancy decreases blood pressure and reduces serious complications related to hypertension, while having no effect on other organ dysfunctions. Prevention of increased blood pressure helps to prevent early deliveries and low birth weight, and postpones development of HELLP syndrome¹ (Hofmeyr et al. 2007). While the trials of calcium supplementation to prevent pre-eclampsia/eclampsia have a lot of discrepancies, the benefit is sufficient to justify programs to supplement pregnant women with low-calcium diets. To prevent multisystem dysfunction, though, a woman may need adequate calcium supplementation starting before pregnancy. Research is ongoing to determine whether pre-pregnancy supplementation will reproduce the more dramatic epidemiological differences.

The Calcium and Pre-Eclampsia (CAP) Study is being conducted at four sites in South Africa and Zimbabwe. It is a randomized trial to evaluate the use of calcium 500 mg daily versus placebo, commencing before conception and continuing to 20 weeks gestation. If found effective, the next step will be trials of community-level calcium supplementation by food fortification. Further research is needed to determine the ideal daily dose of calcium and where vitamin D supplementation fits into the pre-eclampsia prevention strategy.

Options for calcium supplementation programs include: (1) individual supplementation during pregnancy (limited to antenatal care attendees); (2) population supplementation through fortification of staple foods; and (3) population dietary education. Food fortification has many advantages, such as rapid improvements in the micronutrient intake and nutritional status of a population, as well as being a cost-effective public health intervention. Fortifying staple foods will provide physiological doses of micronutrients, will not require changes in existing food patterns, does not depend on compliance, and presents minimal risk of toxicity when the intervention is properly designed and regulated.

¹HELLP syndrome is characterized by hemolysis, elevated liver enzyme levels and a low platelet count; it may or may not be a variant of pre-eclampsia.

Pre-Eclampsia/Eclampsia Interventions and Their Cost-Effectiveness

Steve Hodgins, the Global Leadership Team Leader for USAID's MCHIP, reviewed costs and efficacy of several maternal health interventions.

When making decisions about supporting new initiatives, we select among options based on relative disease burden, effectiveness of the proposed intervention(s), feasibility and cost. This presentation demonstrated the process of modeling to assess the efficacy and cost of key interventions for PE/E prevention (antenatal calcium from 20 weeks and aspirin from 15 weeks, compared with antenatal iron folate from 20 weeks) and treatment (MgSO₄ loading dose), compared with that of routine oxytocin during the third stage of labor to prevent postpartum hemorrhage and iron-folate supplementation to prevent anemia.

To compare preventive and treatment interventions in a modeling exercise, we use averted maternal and neonatal deaths per 100,000 pregnancies/deliveries reached. Depending on evidence available, we use efficacy in reducing cause-specific mortality or overall maternal or neonatal mortality.

To model mortality reduction efficacy, we multiply the MMR by the percentage of mortality accounted for by the specific cause of death multiplied by the documented efficacy. Based on a number of assumptions (MMR = 500, NNMR = 30, PPH% of MMR = 34%, PE/E% of MMR = 19%, Prematurity% of NNMR = 29%), the mortality-reduction efficacy of the interventions under review is presented in Figures 7A and 7B.

Figure 7A. Maternal and Newborn Deaths Averted by Key Interventions

Averted deaths/ 100,000 reached		
	Maternal	Neonatal
Calcium	19	190
Aspirin	16	380
MgSO ₄	40	
Oxytocin	47	
Iron-folate	130	590

USAID MCHIP Interventions for Impact in Essential Obstetric and Newborn Care (June-September Meeting, 20-21 February 2015)

Figure 7B. Cost of Key Interventions per 100,000 Reached

Measuring Costs				
	Unit cost (\$)	Volume/ beneficiary	Volume/ 100,000 reached	Cost/ 100,000 reached
Calcium	.0053-.065/ tablet	250	25 million	\$130,000 - \$1,600,000
Aspirin	.0015-.0052/ tablet	160	16 million	\$24,000 - \$83,000
MgSO ₄	.93-2.09/ 20cc vial	2	2000	\$1,900 - \$4,200
Oxytocin	.059-.227/ 10iu vial	1	100,000	\$5,900 - \$22,700
Iron-folate	.0013-.0048/ tablet	180	18 million	\$23,000 - \$86,000

USAID MCHIP Interventions for Impact in Essential Obstetric and Newborn Care (June-September Meeting, 20-21 February 2015)

For simplicity of the presentation, costs in this modeling exercise have been restricted to those that are commodity-related. Quantification was *universal preventive* versus *case-management for complications* and the volume/quantity required per patient/beneficiary; unit costs are costs per pill/ vial (from MSH price guide). The costs here are not fully loaded, as the intention here is just to compare between interventions, focusing on commodity costs. Final calculations of the costs will be available in a complete manuscript later in the year.

Conclusion: In deciding on new initiatives, it is necessary to consider disease burden, effectiveness of interventions, feasibility and cost. Modeling helps to assess and compare interventions and can be an aid to decision-makers, particularly in ministries of health and among partner agencies. MCHIP is finalizing a more complete analysis, which is expected to be available soon.

Pre-Eclampsia/Eclampsia: How Well Are We Screening for and Managing PE/E?

Dr. Jim Ricca, Chief of Party for MCHIP in Mozambique, continued discussion on the MCHIP Quality of Care survey, now focused on assessment of quality of screening and management of PE/E.

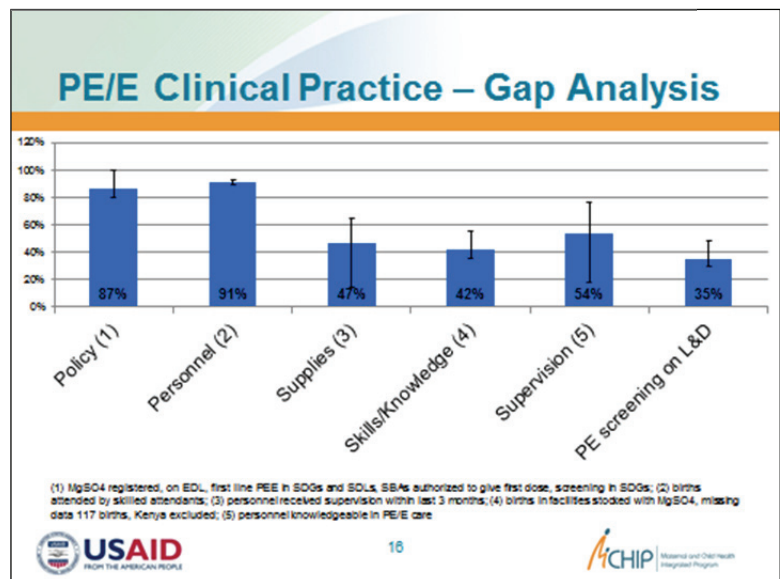
Quality of care in maternal and newborn health comes to the center of attention of many national governments and international organizations. Between 7% and 50% of countries conducted assessment of facility-based births, and between 27% and 80% of countries assessed quality of ANC coverage. While valuable in many respects, these surveys provide little information on the quality of screening for and management of PE/E.

The MCHIP Quality of Care (QoC-MNC) survey focuses on routine care and prevention and management of the most serious maternal and newborn complications, including PE/E. It was described in Linda Bartlett's presentation as part of the session on Quality of Care, with a focus on PPH. In this presentation, we will review the results of this survey to identify quality of care when it comes to screening for and management of PE/E.

Current WHO guidelines for ANC and care during labor and delivery (L&D) were used as benchmarks, with a special focus on the WHO's *Managing Complications in Pregnancy and Childbirth* (2000) guidelines. The sample represents 177 facilities in four countries (Ethiopia, Tanzania, Rwanda and Madagascar); over 1,300 deliveries and over 1,100 ANC consults were observed, and over 570 health workers were interviewed.

The studies concluded that there are currently many missed opportunities for PE/E screening. Although taking blood pressure correctly for screening during ANC and L&D is relatively high (62%), history taking for PE/E danger signs in both the ANC clinic and L&D ward is minimal, and urine testing is very low (6%). Policies need revision as in some countries prevention and treatment of eclampsia was found to be still based on diazepam, and commodities are often lacking, as MgSO₄ for treatment was available in less than half (39%) of facilities. As with PPH, knowledge/skills of providers and quality of supervision are also a problem. Identified gaps were analyzed, as shown in Figure 8.

Figure 8. Gap Analysis for Screening for and Managing PE/E



The studies demonstrated that there is an acute need to emphasize history taking and counseling in addition to physical examination and testing—with strengthened training and supervision, as well as improved commodity supply.

The finalized study protocol, assessment tools, smart phone applications and Web tables will soon be available on the MCHIP Web site: www.mchip.net.

Screening and Early Detection of Pre-Eclampsia

Dr. Harshad Sanghvi, Vice President and Medical Director of Jhpiego, reflected on the large unmet need for early detection of PE/E, missed opportunities at the facility level, and the need to bring detection close to the woman's home through a low-tech approach to testing for PE.

Pre-eclampsia and eclampsia are now a focus of the MNH community for many reasons. Mortality associated with PE/E shows little decline in more than 75% of low-resource countries; between 7% and 15% of pregnant women develop pre-eclampsia (high BP and proteinuria), and approximately 1% to 2% develop eclampsia. Pre-eclampsia and eclampsia contribute between 8% and 25% of maternal mortality and represent increased risk of perinatal mortality. Figure 9 shows recent maternal mortality data due to PPH and eclampsia.

For prediction of pre-eclampsia, risk factors are not very useful. Primigravidas are now about 50% of the obstetric population, and a significant proportion of PE occurs postpartum; there is no effective or affordable biochemical or biophysical predictor available. All pregnant women are potentially at risk and need prevention or early detection of PE.

Figure 9. Nepal Maternal Mortality Study 1998 and 2009

	1998	2009
MMR	539	247
PPH	37%	19%
Eclampsia	14%	21%

Source: USAID's Nepal maternal mortality and morbidity study 2008/09.

Aside from living a healthy lifestyle, using calcium has demonstrated decreased risk for PE/E in pregnant women, although there is a concern that calcium supplements may be out of reach for low-resource settings. And while many countries show a high level of at least one ANC visit, a significantly lower number of pregnant women attend the recommended four ANC visits (meaning there are fewer chances for early detection of PE). There is a large, unmet need for early detection of PE/E and many missed opportunities. According to national Demographic and Health Surveys (DHS), unmet need for checking BP during pregnancy ranges from 13.9% in Indonesia to 53.1% in Bangladesh, and unmet need for urine testing to detect proteinuria ranges from 39.8% in Zimbabwe to 81.3% in Malawi.

While BP and urine tests are necessary for early detection of PE/E, they may be challenging for low-resource settings. Current BP measurement devices are relatively high-cost, cannot be obtained easily and need frequent recalibration. Non-validated BP measuring devices are marketed, and there is limited training of personnel in BP testing and managing problems associated with high BP.

In the effort to detect all the pre-eclampsia before it becomes life-threatening, one approach is to take testing for hypertension and proteinuria to women in their homes—rather than depending entirely on them to reach facilities. This calls for reliable, low-cost, culturally appropriate, robust and innovative devices that can be used by semi-literate community workers.

Jhpiego has collaborated with the Johns Hopkins University's Center for Bioengineering Innovation & Design to solve this problem with a low-tech approach. A number of innovative solutions are currently being developed for this purpose. One of them is a manual, inflatable device for BP testing. It features a self-deflating wrist cuff with digital pressure sensor to provide feedback to a microcontroller connected to a hand-cranked generator, as well as batteries and LED lights; a binary LED panel indicates sufficient power, inflation and color codes that a semi-literate person can readily interpret. A red light indicates hypertension.

To measure urine protein—another test for detection of PE—developed countries commonly use urine dipstick tests. These tests are expensive even though the actual test reagent is relatively cheap. A newly developed prototype protein test is an extremely affordable point-of-care diagnostic device. A marker type pen is filled with the test reagent in place of ink to mark an end of a strip of filter paper. Dipped in urine, the marked strip of paper turns blue when there is elevated (0.7 g/L or more) protein. Pregnant women can use this testing method at home and report to a provider if a color change from yellow to blue occurs.

“All pregnant women potentially are at risk and need prevention or early detection of PE.”

Harshad Sanghvi, Jhpiego

In addition to innovative, low-tech solutions to early detection of PE, use of the Standards-Based Management and Recognition (SBM-R) approach² has been shown to improve quality of screening, detection and management of PE/E among providers—as demonstrated in the Nepal experience.

Panel #6: Evidence for Management of Severe Pre-Eclampsia and Eclampsia. **Moderator: Deborah Armbruster, USAID.**

Choice of Anticonvulsant for PE/E

Dr. Olufemi T. Oladapo, Senior Lecturer at the Department of Obstetrics & Gynecology, Olabisi Onabanjo University in Sagamu, Nigeria, discussed the use of magnesium sulfate for management of pre-eclampsia during labor.

Pre-eclampsia is a major cause of maternal death in Africa. Women can die from severe pre-eclampsia as well as from eclampsia. It is not necessarily a progression from one condition to the other; women can suffer mortality and morbidity from severe PE as well.

Guidelines focused on pre-eclampsia are under development by WHO/Geneva and will be discussed in a meeting in Geneva in April 2011. WHO's guideline development process is rigorous in an effort to grade the evidence and comment on the strength of the recommendation.

The anticonvulsant of choice in severe pre-eclampsia and eclampsia is magnesium sulfate (MgSO₄), introduced for management of PE/E in the 1920s. While the mechanism of action is still unclear, it can be safely and effectively used by practitioners. Mild side effects (flushing) are common, but dangerous side effects (respiratory depression, cardiac depression) are very rare. Magnesium sulfate results in a 59% reduction in the risk of an eclamptic seizure. It is better than diazepam, phenytoin and lytic cocktail. Use of magnesium sulfate also has a lower risk of 5-minute APGAR scores of less than 7 for the newborn.

There are few well-done studies that have looked at various regimens for use of MgSO₄ for PE. The majority of the studies have not been of sufficient quality to recommend a different regimen. Measurement of serum levels of magnesium sulfate is not necessary for the management of patients on MgSO₄. Clinical management should be according to the WHO *Managing Complications in Pregnancy and Childbirth* (2000).

²Jhpiego's practical management approach for improving the performance and quality of health services; it focuses not on problems but rather on the standardized level of performance and quality to be attained.

Choice of Antihypertensive for PE/E

Dr. Peter von Dadelszen, Associate Professor of Obstetrics and Gynecology at the University of British Columbia, described the requirements for an “ideal” antihypertensive agent and evidence behind the choice recommendations for prevention of PE/E.

Severe hypertension is associated with the risk of maternal stroke, placental abruption and many other maternal and perinatal risks. While there is no evidence of the benefit of using an antihypertensive in non-severe hypertension (when BP is less than 160/110) (von Dadelszen et al. 2000), there are many good reasons to use an antihypertensive when BP is greater than 160/110. The focus of this presentation was on pharmacological management of severe hypertension.

The requirements for an “ideal” antihypertensive agent in rural and remote settings are: oral administration, reliable and smooth reduction in BP, rapid onset of action and minimal overshoot in order to keep the BP in target range. There are no randomized controlled trials for placebo versus antihypertensive.

Magnesium sulfate is not an anti-hypertensive!

The selection of antihypertensives include hydralazine, beta-blockers (and alpha-/beta-blockers), calcium channel blockers (CCBs), alpha-methyldopa, angiotensin-converting enzyme inhibitors and angiotensin-II receptor blockers. The last two drugs should not be used in pregnancy due to risks of fetal renal toxicity and intrauterine fetal death.

Most of the drugs can be administered orally. CCBs are more reliable than hydralazine in lowering BP in pregnant women with severe hypertension, while hydralazine appears more reliable than labetalol and is widely used. Nifedipine and labetalol are reliable in reducing the BP, but methyldopa may be the best parenteral agent.

Reducing blood pressure acutely or too rapidly is not recommended because the woman's brain and the fetus may not tolerate it. CCBs and beta-blockers are less likely to cause overshoot than hydralazine.

An intervention package should include up to three oral antihypertensive agent(s); the choice for a single antihypertensive lies between methyldopa, nifedipine and another beta-blocker, probably atenolol as labetalol may not be available on most essential drugs lists. There are theoretical and practical reasons to have all available, including combined central nervous system control, beta-blockade and vasodilatation. It is recommended to have a second effective agent for women whose BP is resistant to another agent, and to reserve IV hydralazine for obtunded/comatose women.

Timing of Delivery and Induction in Pre-Eclampsia

Dr. Matthews Mathai, Medical Officer at WHO/Geneva, spoke on the issue of induction of delivery in case of pre-eclampsia or eclampsia and described the latest WHO recommendations for induction of labor.

Pre-eclampsia affects both the mother and the fetus, reflecting that it is a multisystem disorder. Elevated blood pressure and proteinuria are among the many other findings. The only definitive treatment for pre-eclampsia is the delivery of the baby and the placenta.

Decision-making is based on the needs of both the mother and baby. Considerations of the baby's needs include gestation (delivery is more likely if baby is full-term), possibility of stillbirth and newborn asphyxia. Maternal considerations are based on the degree of worsening of disease (early delivery with severe disease) and possible complications. According to the WHO's *Managing Complications in Pregnancy and Childbirth* (2000), delivery must occur within 12 hours of onset of convulsions in eclampsia, and in severe pre-eclampsia, delivery should occur within 24 hours of the onset of symptoms.

"Delivery of the baby and placenta must occur within 12 hours in the case of eclampsia."

Matthews Mathai, WHO

Trials that look at an expectant care (expectant management or watchful monitoring) approach in severe pre-eclampsia when the gestation is remote from term have not demonstrated a benefit of this approach; larger trials are needed. In addition, considerations regarding availability of newborn intensive care unit (NICU) facilities, accessibility and costs of care, and long-term survival of the neonate make this approach challenging (Churchill and Duley 2002).

A trial that looked at expectant management of PE at term showed that induction of labor is preferred with no adverse fetal outcomes. For mild pre-eclampsia until 36 weeks, WHO recommends expectant management with monitoring; after 37 weeks, the recommendation is to induce labor (Koopmans et al. 2009).

The new WHO *Recommendations for Induction of Labour* (2011) recommend the following induction techniques: oral misoprostol or vaginal misoprostol, low-dose vaginal prostaglandins, balloon catheter, combination of balloon catheter plus oxytocin as an alternative method, and oral or vaginal misoprostol in case of dead or anomalous fetus in third trimester. But it is not recommended to do an amniotomy alone or use misoprostol in women with previous cesarean section.

Current WHO *Managing Complications in Pregnancy and Childbirth* (2000) guidelines recommend delivery within 24 hours for severe pre-eclampsia; and induction methods include amniotomy, oxytocin, prostaglandins such as misoprostol, and balloon catheter.

PE/E Management Strategies at Different Levels of the Health Care System

Dr. Pius Okong, Associate Professor at Nsambya Hospital, Uganda, described how involvement at each level of care could contribute to timely management of PE/E.

Case management of PE/E is based on early and appropriate diagnosis, prevention of seizures, control of BP, evaluation of condition of the baby, evaluation of the condition of the mother (liver function tests, renal function tests and complete blood count) and ongoing monitoring. Timely management is of vital importance. As shown in Figure 10, there are many things everyone can

do at each level of care, including at the family and community levels, to help women and babies survive PE.

Figure 10: Steps of Timely PE Management at Each Level of Care

Timely management			
Elements	CEmOC	BEmOC	Family/Co
• Diagnosis	YES	YES	Recog
• Treat	YES	Initiate	Cont.
• Monitor	YES	YES	?
• Plan delivery	YES	No	No
• Delivery	YES	Y/N	?

At the family/community level, pregnant women and community health workers should be able to recognize seizures and danger signs/symptoms, plan for emergency and be ready to transfer to a basic emergency obstetric and newborn care (Basic EmONC) facility when needed. There is still a need to have evidence to fill the gaps at the community level, especially regarding information for community health workers (CHWs) (diagnosis, urine testing and choice of drugs).

The Basic EmONC facility should be able to diagnose PE based on symptoms and tests; initiate

MgSO₄ and antihypertensive; do ongoing monitoring for seizures, urine output and fetal status; and plan for transfer to a Comprehensive EmONC facility when needed. More evidence is needed regarding benefits of early PE treatment.

Comprehensive EmONC facility should have emergency plans, clinical drills and adequate consumables, as well as be comfortable in using MgSO₄ for PE/E. More evidence is needed regarding the use of MgSO₄ and timing of delivery in case of PE/E. It is necessary to practice complex aspects of case management in health facilities, to prepare teams for adequate actions. Job aids are very useful in supporting quality of care; Nsambya Hospital in Uganda developed a job aid for the management of women with PE/E and use of MgSO₄.

Dr. Okong closed by saying, “We were excited about the Magpie trial,³ and thought that we should use magnesium sulfate for seizure prophylaxis, but we are still a long way from routine use of this.”

Panel #7. Implementation of PE/E Programs. Moderator: Luc de Bernis, UNFPA.

A general discussion that followed the presentations focused on the following issues:

- Induction in pre-eclampsia: Artificial rupture of membranes (AROM) is not recommended in areas of high HIV prevalence. Sweeping of membranes is not a method of induction but can reduce the need for formal induction.
- Availability of MgSO₄ means that sometimes you have 20% or 50% solutions; not standardized. Need to ensure availability of correct formulation on the emergency tray at the start of the shift.
- Systolic blood pressure parameters for treatment: Women with a systolic BP >160 mm Hg will start to stroke and therefore should be treated. This becomes more important as women become older and heavier.
- The principle of reduction of hypertension is to bring BP down about 10% per hour. It should not be brought down too quickly. Hydralazine IV can have too acute an effect and is not recommended.

³ The Magpie trial (1998–2001), a randomized trial comparing magnesium sulfate and placebo for women with pre-eclampsia, demonstrated that MgSO₄ reduces the risk of eclampsia without any substantive effect on longer-term morbidity and mortality for the women or children.

Early Experience of Expansion of Use of MgSO₄ in Nigeria

Dr. Jamilu Tukur, consultant ob/gyn at the Aminu Kano Teaching Hospital in Kano, Northern Nigeria, described the introduction of magnesium sulfate to a state health system in an area where it was not available and discussed the effects, results and challenges of its introduction to the maternity.

Despite evidence, the use of magnesium sulfate is still not universal in Nigeria, but that is now changing. The Society of Gynaecology and Obstetrics of Nigeria (SOGON) meeting in 2007, which presented data on the efficacy and safety of MgSO₄, served as the impetus. The Population Council sought funding for the project from the MacArthur Foundation. Kano, the most populous state (over 10 million) of Nigeria, was selected as the project site; the state has 44 local government areas (LGAs), 35 general hospitals and a free maternity scheme.

A survey in 2009 revealed that only Murtola Mohamed Specialist Hospital (MMSH) had MgSO₄, but used it rarely for PE/E. Through a cascade training of trainers, Population Council trained midwives and physicians in 10 hospitals in Kano State. They developed a protocol using IM MgSO₄. Nearly 60% of the women who were treated with MgSO₄ had attended the antenatal clinic. Staff reported 1.2% adverse reactions and 4% of those treated for PE/E died. Overall, reduction in maternal deaths from eclampsia during the project was 66%. The government was so impressed with the results that they took over procurement of MgSO₄ by the 10th month, and trained staff initiated on-the-job training. MgSO₄ protocols are now being taught in pre-service education as well.

“...Patients call MgSO₄ the drug that prevents death!”

Jamilu Tukur, Nigeria

The project demonstrated not so much the benefits of MgSO₄ (which were known) but that evidence-based interventions are replicable and can be introduced into new areas, and that the sustainability of a program is directly related to engagement of stakeholders.

The major challenges were stockouts in the early phase, the need for quality of ANC to be improved, and inadequate transportation for women in labor, which delayed their access to health facilities.

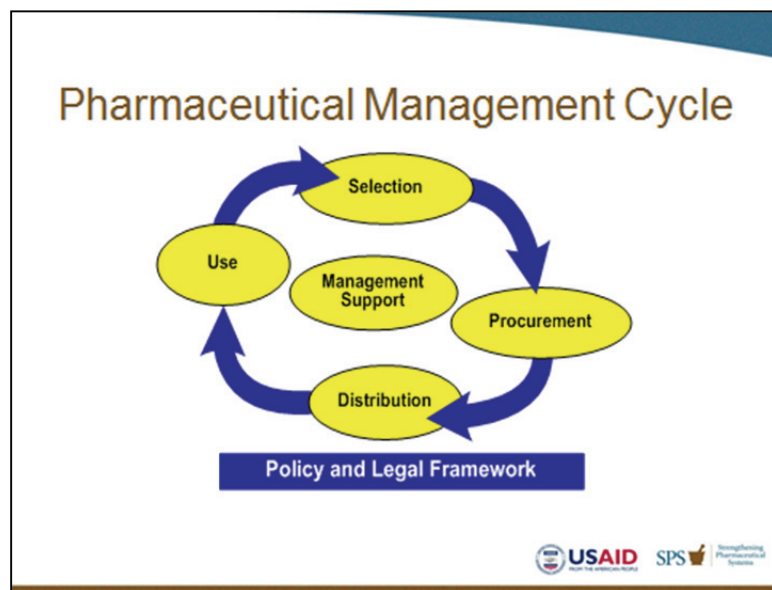
Management of Medicines and Pharmaceutical Supplies for Use in the Prevention and Treatment of Pre-eclampsia and Eclampsia

Grace Adeya, Sr. Technical Manager for Maternal Child Health at the Strengthening Pharmaceutical Systems (SPS) Program, described elements of the pharmaceutical management cycle, and discussed pitfalls and steps to ensure sustainable supply of PE/E medicines to the facilities.

Effective management of PE/E requires that necessary medicines and supplies are on hand for immediate administration. PE/E medicines in many countries are part of the national pharmaceutical supply system and are subject to the same structural, financial and human resource constraints as all products that rely on this supply system. Effective management of PE/E medicines and supplies requires careful procurement procedures with involvement from the health staff who treat PE/E.

The pharmaceutical management cycle (Figure 11) involves selection, procurement, distribution and use; its effectiveness depends on management support that includes standard operating procedures, financing and management information system (MIS).

Figure 11: Elements and Framework of Pharmaceutical Management Cycle



To ensure a sustainable supply of PE/E medicines to the facilities, each point in the pharmaceutical management cycle should be addressed. A procurement survey conducted in Mali and DRC assessed management of the medicines and supplies for the prevention and treatment of PE/E.

If uterotonics are available but not included in the national standard treatment guidelines or essential medicine lists (EML), they are not purchased with national funds. Those who make procurement decisions at the health facilities or peripheral level need to know whether the desired products are on the EML. The education level of staff working in the

procurement system is inconsistent; and, in many cases, no standards were in place to regulate who should be making procurement decisions at different levels of health facilities. A Mali survey revealed that 10% of the staff who are responsible for facility medical procurement have a primary education and only 30% have an educational level above secondary. If the person placing orders does not understand the need for PE/E medications, these drugs may be the ones that are cut off the drug request due to budget restraints. The Mali assessment demonstrated the inability of staff to maintain and utilize the data they have to estimate their medicine requirements effectively.

Familiarity of the staff with a particular drug also influenced procurement decisions and therefore the use of the drug. In DRC, 90% of staff knew that oxytocin is the recommended medicine for the practice of AMTSL, but only 8% knew that MgSO₄ is the recommended medicine for the management of PE/E. Also, diazepam will continue to be available at the health facilities due to its familiarity and lower cost, while MgSO₄ is more expensive and still unfamiliar.

To ensure proper pharmaceutical support for prevention and treatment of PE/E, the pharmaceutical management cycle should be strengthened. This includes many steps, some of which are as follows:

- Selected PE/E drugs should be included in national EMLs and standard treatment guidelines;
- The appropriate cadre(s) should be involved in drugs and supplies procurement and purchasing decisions at the national, regional and facility levels;
- Every component of the procurement system should be regulated, have standard operating procedures and be in compliance with best practices;
- To introduce use of MgSO₄ at all levels of service, it should be included in pre- and in-service training and continuing education programs; and
- Maternal health issues should always be included among the health priorities.

Changing Policy—Rwanda’s Change in Guidelines

Dr. Stephen Rulisa, obstetrician-gynecologist, lecturer at the University Teaching Hospital of Kigali (CHUK), Rwanda, and the President of the Rwanda Medical Association, described current national priorities in maternal and child health, changes made in the national policies based on these priorities, and the effect that these changes had on the national maternal mortality rate.

Maternal and child survival is on top of the list of Rwanda’s health priorities, having been identified as absolutely crucial for the long-term health of the country on its road to development. National priorities in maternal and child health include an affordable and quality package of MNH services, improvement of EMOC, EONC and FP services; prevention and treatment of fistula; gender and women’s empowerment issues; male involvement; and strengthening of the Ministry of Health’s Health Information System (HIS). A combination of approaches to support progressive developments includes active involvement of parliamentarians in development issues, performance-based financing, incentives for women to utilize ANC services, and involvement of communities and faith-based organizations.

“If you want to change lives of women and children, involve women in the decision-making process,” said Dr. Rulisa. Rwanda has the highest number of women in decision-making positions in Africa.

“Healthier mothers mean healthier children, and healthier children mean a healthier, more productive society in the future.”

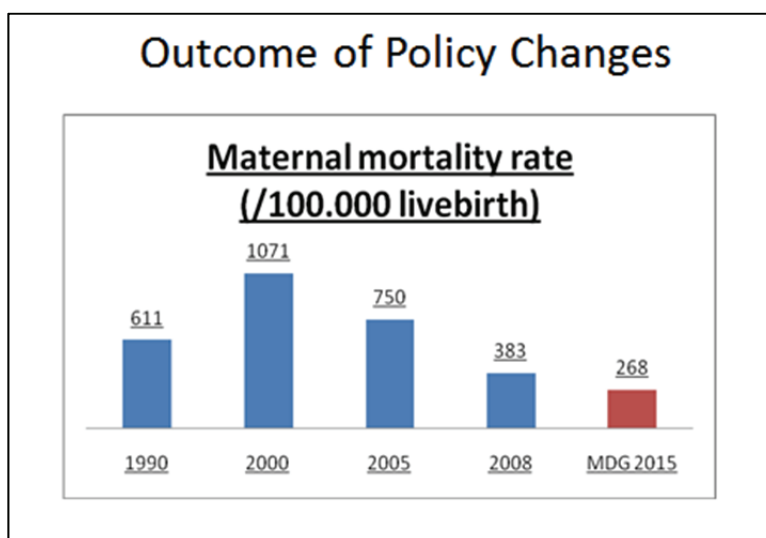
Stephen Rulisa, Rwanda

Innovative changes in health policies include the following:

- Increased budget allocation for health over the years
- Health insurance availability to 96% of the population in 2010, up from 3% in 2002
- Involvement of professional bodies and other stakeholders
- Oxytocin, MgSO₄ and misoprostol introduced on essential drug list and decentralized to health centers
- Strengthened CHWs at the community level; community performance-based financing through cooperatives
- Formation of clusters from different ministries to address health issues
- Use of innovative technologies (Rapid SMS, phone for health, phones to CHWs, Internet access at the facilities)

The outcome of policy changes and development has been the rapid and sustainable decrease in maternal mortality, as shown in the Figure 12.

Figure 12. Outcomes of Rwanda’s Policy Changes



Midwives Lead in Detection and Management of PE/E in Tanzania

Gaudiosa Tibaijuka, Senior Technical Manager with the Jhpiego Tanzania office, presented Tanzania national efforts toward addressing PE/E, described health policy and guidelines to address PE/E, and discussed midwives' role in detection and management of PE/E—as well as strategies to address the challenges.

In Tanzania, despite the enabling environment and the health policy and guidelines to address pre-eclampsia and eclampsia, these conditions represent the third most common cause of maternal mortality (17%), after hemorrhage (28%) and unsafe abortion (19%) (WHR 2006). The President called to “Stop needless maternal and newborn deaths” and is very supportive to maternal and newborn health initiatives. Tanzania health policy supports positive developments toward improved quality of services; it emphasizes skilled birth attendance (SBA) and access to quality Basic and Comprehensive EmONC. The 2007–2017 Primary Health Services Development Program includes accelerating and strengthening training of SBAs and recruitment, rewarding and retention of providers.

Human resources play a significant role in the national MNH situation. According to the Primary Health Services Development Program report (2007), the current ratio of Tanzania skilled workers to the population is 1:2,244 people; and the highest maternal mortality rate correlates with the lowest numbers of skilled health workers in the region. Studies showed that a 10% increase in qualified health workers correlates with a 5% decline in mothers' deaths and 2% decline in deaths of newborns and children under 5 (Joint Learning Initiative 2004).

Nurse-midwives form 60% of the national health sector workforce in Tanzania; the nurse-midwife to population ratio is 1:1,600, versus the doctor to population ratio of 1:8,500. Over 50% of deliveries are attended by a health professional (Tanzania DHS 2010), 75% of which are attended by a nurse-midwife—thus putting the midwife in a prime position to diagnose and manage clients with pre-eclampsia or eclampsia.

Nurse-midwifery practice in Tanzania is guided by the Tanzania Nursing and Midwives Council and supported by professional associations. The job description includes Basic EmONC Signal Functions (2009), such as administering parenteral anticonvulsants (MgSO₄). Programs have standardized midwifery practice using SBM-R and current best practices in Basic EmONC. Now, midwives diagnose and manage PE/E—giving the loading dose and maintenance dose(s) of anticonvulsant and monitoring for toxicity. Overall, midwives provide care that women want, care in clean facilities with availability of medicine/equipment, care that is culturally appropriate and women-friendly—thus promoting services and facility usage.

There are a number of challenges, though, hampering national efforts to improve maternal health. The human resources crisis, remotely located government health facilities that are hard to reach when stocks of MgSO₄ run out, shortages of other needed drugs (calcium gluconate), and an insufficient education system that is slow to change, all greatly contribute to the magnitude of the problem. Performance standards are also hard to implement due to overcrowded wards and clinics, and shortage of medications, equipment and supplies, including blood pressure-measuring devices.

In summary, pre-eclampsia and eclampsia continue to be one of the leading killers of women in Tanzania, despite the national efforts and government support to fight them. Midwives are on the frontlines in detection and management of pre-eclampsia and eclampsia, but they need to be properly trained to accomplish this role.

There is hope, however, that through the Primary Health Services Development Program (2007–2017), progress will be achieved through implementation of EmONC via various improvements in infrastructure, training, logistics, supervision and community linkages.

Creating an Enabling Environment for PE/E Interventions

Lindsey Morgan, a senior health analyst with MCHIP/Broad Branch Associates, described components of the health system that influence a pregnant woman's access to care and ultimately help or hinder her access to effective PE/E interventions.

We know that most maternal mortality is avoidable with technical interventions. But we also know that many women in developing countries continue to die of pregnancy-related complications, not because we don't know how to deal with complications like PE, but because these interventions take place in a context that can either help or hinder delivery of these interventions. And if we miss the context or the system, we miss a key determinant of the success or failure of these interventions.

The 2000 World Health Report defines the health system as “all the activities whose primary purpose is to promote, restore or maintain health.” It includes many components, as well as physical and social environment, on which lies the success of an intervention.

What needs to happen in the system for the effective PE/E prevention and management? The process starts when a woman discovers that she is pregnant. As ANC is key to prevention and detection of PE, the first thing we need is for a woman to access care. Components of the system such as insurance (social insurance or community-based insurance), targeted subsidies (vouchers or conditional cash or in-kind transfers) and overcoming geographic barriers through bringing services to communities may help the woman seek and access care.

To ensure prevention, detection and treatment for PE/E and other pregnancy-related complication at the health care facility, another set of conditions includes the presence of skilled providers, drug availability, clinical guidelines and provider motivation to deliver quality care. Introduction of continuous quality improvement processes (such as Standards-Based Management and Recognition [SBM-R]) and rewarding quality of care through setting up the voucher scheme (Kenya, Uganda), accreditation of facilities (Brazil) and institutionalizing payment linked to “quality score” (Burundi, Rwanda) may be ways to improve quality of care at the facility level.

In summary, success of PE/E interventions can be helped or hindered by strengths and weaknesses in the health system.

CROSS-CUTTING ISSUES IN MAKING AN IMPACT IN OBSTETRIC HEALTH

Panel #8. Measurements and Indicators to Assist PPH and PE/E Programming and Call to Action. Moderator: Pyande Mongi, WHO/AFRO.

Routine Measurements of Quality of Care

Barbara Rawlins, Senior Monitoring and Evaluation Manager at MCHIP/Jhpiego, and Maryjane Lacoste, Tanzania Country Director/Mothers and Infants, Safe, Healthy, Alive (MAISHA) and Program Director, Jhpiego, reviewed existing measurement methods for routine quality of care, described gaps in routine quality of care data for maternal and newborn health services, presented a case study from Tanzania and discussed future measurement plans.

Measuring the quality of maternal and newborn health (MNH) care is multi-faceted and complex, especially measurement of quality of intrapartum care as it includes both routine care and management of complications. Periodic surveys and routine measurement mechanisms are conducted to measure the quality of MNH services.

Routine measurements are needed to help program managers and policymakers to have regular and reliable data for decision-making. Key methods for measuring MNH quality of care routinely are:

- Structured clinical observation of provider-client interactions that use clinical checklists for data collection and capture compliance with clinical guidelines and standards;
- Inventory of facility infrastructure/supplies/equipment that use facility audits and supervision reports and capture stockouts of key supplies and organization of services; and
- Record review to capture service utilization, management of complications and number of deaths and complications through health management information system (HMIS) and logistics management information systems (LMIS) reports, facility registers and patient charts, maternal and perinatal death audits and sentinel site surveillance systems.

Although useful, routine MNH quality-of-care data have many gaps. For example, observational assessments are not conducted routinely; logistics management information systems and supervision reports include only a limited set of facility readiness indicators, such as stockouts; and many MNH service indicators of interest are not captured in national HMIS, especially those related to intrapartum care (e.g., AMTSL). HMIS contains many indicators, but they are hard to retrieve and not standardized.

One idea for monitoring the quality of care routinely is the use of sentinel sites. Sentinel sites are health facilities selected (using specific criteria) for monitoring of key indicators that are generally not reported up through the national HMIS. Sentinel site surveillance (SSS) traditionally has been used to track disease-related indicators, such as malaria.

MCHIP/Malawi and the MAISHA Program in Tanzania are in the process of applying an SSS approach for the continuous quality monitoring of MNH services. The MNH SSS systems are intended to complement MNH data available from national HMIS reports, test the feasibility of collecting additional MNH quality indicators at facilities on a routine basis, and generate national support for routine collection of facility-based quality indicators that prove feasible.

The ACCESS/Tanzania program initiated an SSS system for focused ANC (FANC) in 2006 and expanded it under MAISHA in 2009 to include monitoring of basic emergency obstetric and newborn indicators. It now covers 40 facilities across 21 regions plus Zanzibar, and MAISHA staff conduct quarterly visits to all facilities in collaboration with district and regional Ministry of Health and Social Welfare colleagues. The system includes indicators from the HMIS, traditionally tracked indicators such as maternal and neonatal deaths, as well as: the number of ANC clients with hemoglobin less than 8.5 g/dl; the number of functional BP machines with stethoscopes; and stockouts of oxytocin, ergometrine, misoprostol and MgSO₄—in addition to other data points. At the same time, MAISHA is working with the national HMIS system so that all of these data can be available on a more routine and regular basis to stakeholders (at which time the SSS system would phase out). So far, the MOH of Tanzania has been able to use the facility data to make a number of programmatic decisions, including addressing the stockout situation with malaria-preventive drugs (sulfadoxine-pyrimethamine [SP]).

As the next steps, MCHIP/Malawi is testing a routine MNH quality sentinel surveillance system in the coming months. MCHIP will also be working to simplify its Quality of Care for Maternal and Newborn Complications survey tools for use on a routine basis as part of supervision visits. In Tanzania, MAISHA will be expanding the SSS system to collect quarterly data from all (280+) program sites. Question to the participants: Are there aspects of MNH quality of care that we could be monitoring but are not?

MNH Quality of Care Measurement Resources can be found at:
www.who.int/reproductivehealth/publications/monitoring/9789241547734/en/index.htm
www.rollbackmalaria.org/partnership/wg/wg_pregnancy/docs/MIPMEFramework.pdf

Revisiting Global Benchmark Indicators for Maternal and Perinatal Health

Steve Hodgins, the Global Leadership Team Leader for USAID's MCHIP, explained how global indicators currently used for tracking progress in maternal health may not be adequate and described efforts toward improving benchmark indicators to better reflect content and quality of care.

We monitor overall program performance and key sub-systems and processes for accountability and to direct our improvement efforts; the results of our monitoring should tell us where we need to make adjustments in how we're working. A good indicator is relevant, reasonably closely approximates what we're interested in, and can feasibly be collected on a regular basis. It is very important that we have the right set of indicators, because what we measure is what we pay attention to.

Global benchmark indicators are used as overall measures of program performance, for tracking progress on MDGs, planning purposes, prioritization and projecting impact, holding countries and program managers accountable, reporting in global fora (e.g., annual World Health Assembly) and global publications (e.g., annual UNICEF reports), and as a basis for "results-based" financing schemes.

"What we measure is what we pay attention to."

Steve Hodgins, MCHIP

The primary indicator for Millennium Development Goal (MDG) 5 is the Maternal Mortality Ratio (MMR), which is what we are interested in influencing; unfortunately it is not generally feasible to measure this on a very frequent basis and when we do measure or model it, it is not precise.

The two key secondary maternal health indicators for MDG 5 are ANC and SBA delivery coverage. Both of these measure very important contacts between the system and beneficiaries

Part I: Interventions for Impact in Obstetric Health

during the antenatal and intrapartum periods. However, they measure only “contact” (i.e., an opportunity to provide a needed intervention or service), but do not tell anything about the content and quality of care during that contact.

The SBA delivery rate indicator measures attendance of a delivery by a skilled birth attendant. The MOH’s HMIS data provide proportion of deliveries documented as having been attended by a physician, midwife or other cadre classified by the MOH as an SBA, while survey data provide the proportion of deliveries that, according to mothers surveyed, were attended by someone they thought belonged to one of the categories above. At similar levels of MMR, SBA delivery rates vary widely. Similarly, with very similar SBA delivery rates, MMR can vary enormously.

Like the SBA delivery rate indicator, the proportion of pregnant women receiving at least one ANC visit tells us that a contact occurred, but it really tells us nothing about what was actually done during that contact.

Although these are important and appropriate indicators to track, they tell us little more than that we’ve been able to get these women through the front door into our clinics and hospitals. They tell us nothing about content and quality of care. For those involved globally in maternal health program performance measurement, this problem of an inadequate set of benchmark indicators has been recognized for some time. How is this being addressed?

A process has begun—led by the WHO Department of Reproductive Health and Research (RHR) and Making Pregnancy Safer (MPS), and supported by MCHIP/USAID and the Centers for Disease Control and Prevention (CDC)—revisiting the issue of benchmark indicators used for tracking maternal health program performance. At a meeting in Delhi in September 2010, it was agreed that this issue is a priority. A follow-up working meeting was held in Geneva in December 2010. Several key areas were identified for further development, including provision of oxytocin (or other suitable uterotonic) in the third stage of labor, MgSO₄ for severe pre-eclampsia and eclampsia, quality of intrapartum care (measured through intrapartum mortality), obstetrical near-miss, and cesarean section (e.g., by absolute obstetrical indications; disaggregating by district, by socio-economic status).

It is expected that by the fall of 2011, for several of these key areas, new recommendations will be developed for how Ministries of Health track maternal health program performance. For some of the areas, the process will likely take somewhat longer, as new indicators and ways of collecting data on them through routine health information systems are tested and validated.

Over the coming year, some countries will be implementing new performance-monitoring indicators and approaches. Some countries may already be tracking indicators closely related to these areas. For those involved in this effort globally, we are particularly interested in looking at such settings, where there has already been some experience in these areas. For more information, contact the presenter at shodgins@mchip.net or MCHIP at www.mchip.net.

Taking the Messages of Addis Ababa Back Home and Putting Them into Action

Dr. Jeffrey Smith, Maternal Health Team Leader of MCHIP, summarized the Maternal Health section of the Meeting by putting it in perspective and encouraged the participants to use the new ideas and tools upon their return to advance PPH and PE/E national programs.

This meeting can be viewed as having before, during and after segments. Before, you held meetings of local maternal health committees, conducted a country analysis, reviewed current national efforts and assembled beautiful country posters. During, we all shared, exchanged and learned. The process was summarized in the “Interventions for Reduction of Morbidity and Mortality” matrices for PPH and PE/E (Tables 1 and 2, pages 54 and 55)—concise and informative documents that were designed to help shape the vision of country programs. After, you will be meeting with your local maternal health committee, share ideas and start planning for action.

You now have tools for sharing, including country analysis and maps of scale-up process. You also have tools for action: these are the toolkits prepared for PPH and PE/E country programs. The toolkits include: program guidance, an advocacy briefer and presentation, a technical briefer and presentation; and many examples of policy, standards, training and M&E tools, both global and from national programs. Each country team received a printed copy of each toolkit, and all participants received flash drives with the complete and expanded electronic versions. The toolkits will soon be available electronically on the K4Health Web site (www.K4Health.org).

National maps of scale-up progress are another good tool for the country teams. We encourage you to adapt and expand your map, modify it as a national tracking system for your program, and consult it at least annually to identify gaps and areas for greater focus.

For more information, contact the presenter at jsmith@mchip.net or MCHIP at www.mchip.net.

A general discussion that followed the presentations focused on the following issues:

- How do we assess training institutions? What do these institutions need? Research but also assistance in incorporating evidence into interventions, translating evidence into practice.
- Exit interviews are helpful and complementary but do not provide the whole picture.
- How do we efficiently link tools and experience to MOH tools? There are lots of tools; it gets confusing.
- Senegal has incorporated AMTSL into its HMIS.
- SBAs don't affect MMR? Concept: We need competent care to improve outcome. Data come from surveys that may be of poor quality. For example, data will show only a category of workers without measuring competence of the care they provide. Direct correlation if analyzed by categories.
- Should data be collected from the registers or from the HMIS? Who is paying for quarterly visits? MOH versus The Program? The question reflects the issue of sustainability. Annual observations should be based on SBM-R. We should have a quality improvement system for teaching institutions, quality pre-service education, including setting up skills labs. Not adding new indicators is an interim measure, with a goal to strengthen HMIS to make routine data reliable and available.
- Suggestion: Add a few indicators for AMTSL, not just oxytocin.

REDUCING NEWBORN MORTALITY DUE TO ASPHYXIA

Panel #9. Improving Neonatal Resuscitation—Helping Babies Breathe

This series of presentations and discussions at the end of the Day 3 served as an introduction to the next part of the meeting (Days 4 and 5) and focused on the issues regarding neonatal health—specifically newborn asphyxia.

Essential Newborn Care

Dr. Pyande Mongi, of WHO/AFRO, focused on the importance of neonatal resuscitation within essential neonatal care (ENC), described the newborn health situation in Africa, touched on key components of ENC, and described newborn resuscitation in context of the WHO Essential Newborn Care Course.

Globally, there is a 30% decrease in under-5 mortality, from 12.4 million in 1990 to 8.8 million in 2008, but neonatal mortality still represents about 40% (3.5 million) of under-5 mortality. Most neonatal deaths occur in the first week of life.

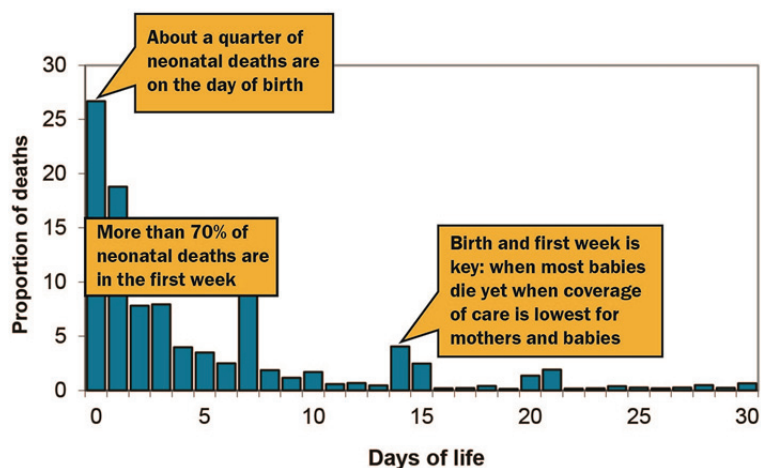
In Sub-Saharan Africa, newborn deaths constitute 29% of under-5 mortality. The main causes for almost 90% of newborn deaths are: infections (32%); pre-maturity and low birth weight (29%); and birth asphyxia and birth trauma (27%). Most of these causes are preventable and/or treatable.

Data from DHS surveys in 20 African countries shows that 25% of newborn deaths occur in the first day of life, and more than 70% of deaths occur in the first week after birth (Figure 13). This is also the time when the coverage of care is the lowest. Prevention of these early neonatal deaths will require improvements in care at the time of birth and improvements in care in the early postnatal period.

WHO works to ensure that newborn care is a focus for service providers and policymakers. The concept of ENC was developed at the WHO Working Group Meeting in 1994 in Trieste, Italy. ENC components include cleanliness, thermal protection, early and exclusive breastfeeding, initiation of breathing (resuscitation), eye care, immunization, management of newborn illness, and care of the preterm and/or low birth weight newborn. ENC has been further divided into Basic Care and Special Care

The WHO *Essential Newborn Care Course* is part of the Integrated Management of Pregnancy and Childbirth (IMPAC) series, and is consistent with the guide for doctors, nurses and midwives *Managing Newborn Problems* (2003). The IMPAC series offers clinical and program guidelines, educational modules, advocacy materials, and tools for monitoring and evaluation.

Figure 13. When are the 1.2 Million African Newborn Deaths Occuring?



Source: Lawn, JE and Kerber K. Daily numbers of death in 20 African countries during first month of life—based on 20 DHS datasets (2000 to 2004) with 5,763 neonatal deaths

The five-day *Essential Newborn Care Course* is designed for doctors, nurses and midwives, and is applicable to any health facility treating mothers and newborns. By 2010, the ENC training was introduced in 40 countries, including 20 African countries. The five modules include:

- Care of the baby at the time of birth
- Examination of the newborn baby
- Care of the newborn baby until discharge (including sessions on routine care and resuscitation of the newborn)
- Special situations (e.g., overcoming difficulties in breastfeeding, the small baby, alternative methods of feeding)
- Optional module on kangaroo care

Newborn asphyxia (failure to breathe within 1 minute after delivery) is one of the leading causes of newborn mortality, but is treatable if attended to by a health worker skilled in neonatal resuscitation. While only 5% babies need resuscitation, it must be anticipated at each delivery.

Newborn resuscitation is a critical component of ENC. The WHO ENC training package contains a module on basic newborn resuscitation based on the 1998 guidelines, which are currently being updated; however, countries may choose to replace that module with Helping Babies Breathe (HBB). It is expected that introduction of the ENC course will trigger the review of national neonatal resuscitation guidelines by level of care.

Efforts to improve ENC should be combined with efforts to improve good quality obstetric care, to prevent adverse neonatal outcomes and thus reduce the need for resuscitation.

Improved Labor Care to Reduce Neonatal Asphyxia

Dr. Jeffrey Smith, Maternal Health Team Leader of MCHIP, described the links between maternal care and labor practices and the status of the newborn, and listed good practices to prevent the newborn asphyxia.

The Afghan Maternal Mortality Survey of 2002 showed a maternal mortality ratio of 1,600 maternal deaths per 100,000 live births. But equally shocking was the fact that 77% of newborns died if they were born to mothers who also died (Bartlett et al. 2005). Newborn mortality and health are directly linked to maternal mortality and health. Improved maternal care will result in improved newborn outcomes. With use of evidence-based labor and delivery practices, we can expect to reduce maternal and newborn morbidity and mortality and improve quality of care—as well as achieve a new level of respect for women and newborns.

“If we don’t care for the mother, we put the baby at serious risk of death.”

Jeffrey Smith, MCHIP

Good labor care is not so much doing something, as waiting to do something if needed. Therefore, labor care involves being vigilant. Obstetrics and midwifery are about watchful waiting—for mother, for newborn, for possible complications. Interventions should be done only when they are proven to be effective and are necessary.

Clinical Practices to Be Avoided to Reduce Asphyxia	Clinical Practices to Be Promoted to Reduce Asphyxia
<ul style="list-style-type: none"> ▪ Restriction of movement during labor ▪ Supine position during labor and birth ▪ Uninterrupted pushing during second (expulsive) stage ▪ Uncontrolled use of oxytocin 	<ul style="list-style-type: none"> ▪ Skilled attendance at every birth ▪ Use of the partograph ▪ Companionship in labor and birth ▪ Rest between pushing in second stage ▪ Food and drink during labor ▪ Appropriate management of pre-eclampsia ▪ Appropriate use of cesarean section

Pre-eclampsia is a major killer of women and can impact newborns as well. If pre-eclampsia is not recognized and not managed appropriately, seizures can result, leading to profound newborn asphyxia. The hypertension of pre-eclampsia can reduce uterine blood flow, again resulting in asphyxia. All of this can lead to emergency, and sometimes unnecessary, cesareans—which also can contribute to asphyxia.

But to shift the focus to good practices during normal labor, consider the following...

In the second stage of labor, the cervix is fully dilated. A woman should push only with contractions and rest in between. **During second stage, the brief rest between pushes is essential** to allow the mother to reoxygenate her blood and allow for that blood to flow to the uterus and placenta. As essentially no blood flows through the uterus to the placenta during a contraction, rest between contractions is the only way to deliver oxygen to the fetus.

Position is also important to help ensure adequate blood supply. A supine or lithotomy position causes compression on the great vessels and reduces blood flow to the uterus. Therefore, allow the woman to assume other positions during labor and birth. Most common positions during the first stage of labor are on the left side, standing or walking, while during the second stage, squatting, sitting, and hands-and-knees positions are common. **Hydration during labor is also essential** to maintain intravascular volume and promote uterine and placental perfusion.

If labor needs to be augmented, it should be done for purely medical reasons, not due to the requests to “speed up labor.” The **partograph should be used** in order to diagnose protracted active phase. If oxytocin is to be provided, it should be provided according to the *Managing Complications in Pregnancy and Childbirth* protocols. Uncontrolled oxytocin causes tetanic uterine contractions and complete restriction of blood flow to fetus, which can lead to asphyxia.

There are other practices that help to ensure that babies are ready to breathe right when they are born. Preventing infection and doing procedures correctly are part of it. Overall, efforts must be made to keep normal births normal.

Examples of good maternal and newborn care, which can help to prevent asphyxia, include the following:

- Use partograph for vigilant labor monitoring
- Allow companionship during labor and birth
- Ensure hydration and proper position
- Prevent and manage eclampsia correctly
- Avoid uncontrolled oxytocin

- Ensure supportive second stage management based on fetal and maternal condition
- Avoid incorrect practices

But ultimately, preventing and managing asphyxia requires skilled attendance at birth.

Facility Assessment of Quality of Care for Essential Newborn Care and Neonatal Resuscitation in Selected African Countries

Dr. Joseph de Graft-Johnson, Newborn Team Leader of MCHIP/Save the Children, presented findings from the quality of care assessments for ENC and neonatal resuscitation in four countries, and discussed the assumption that presence of a skilled birth attendant equals quality newborn care.

MCHIP conducted a survey to assess quality of care for essential newborn care and neonatal resuscitation in Ethiopia, Tanzania, Rwanda and Madagascar. Between February and December 2010, the program visited 177 facilities in these four countries, observed 2,473 deliveries and ANC consults, and interviewed 571 health workers. The surveys looked at the essential newborn care policy-to-practice components, including policies, supplies for immediate newborn care and management of newborn complications, providers' knowledge and practices of immediate newborn care, and management of newborn asphyxia.

Findings show that policies are universally available. Supplies for immediate newborn care are present at most of the facilities (mean score: 63%); supplies are also available for management of newborn complications (mean score: 67%). Providers' knowledge of the immediate newborn care and management of complication was below 60% for all components, 44% for newborn resuscitation. Correct newborn care practices vary from 90% for immediate drying of the newborn to 32% for the skin-to-skin contact with the mother; overall, 24% of deliveries (range 17–40%) received all essential newborn care elements. Unnecessary and harmful practices—such as slapping and holding the newborn upside down—while not common, were still observed. In simulation of management of newborn asphyxia, ventilation with bag and mask presented the most challenge to the providers; only 31% of providers were able to correctly resuscitate an asphyxiated baby.

These findings challenge the assumption that skilled birth attendance equals quality newborn care. A sizable percentage of health facilities have newborn resuscitation equipment, but staff skills need significant improvement. There is need to improve the quality of newborn care at health facilities. Countries are committed to make these improvements and all must play their part to make it happen.

Helping Babies Breathe

Tore Laerdal, Chairman of Laerdal Medical and Executive Director of the Laerdal Foundation for Acute Medicine, provided an overview of the materials developed for the Helping Babies Breathe program focused on newborn resuscitation.

Helping Babies Breathe (HBB) is an educational program built on scientific principles and a wealth of evidence from the ILCOR (International Liaison Committee on Resuscitation) guidelines, which are revised every five years. The content of HBB has been harmonized with international health policy and guidelines through WHO technical expert review. As part of the USAID Global Development Alliance (GDA)—with the overall objective to reduce newborn mortality due to asphyxia—Laerdal Medical is working to improve the functionality and availability of both training materials and clinical equipment.

The set of learning materials for HBB includes a learner workbook, flip chart and posters, and is focused on Airways and Breathing—the key components of the decision-making and management of newborn asphyxia. At the heart of HBB is the Action Plan. This is a pictorial guide to the evaluations, decisions and actions that should be taken to help a baby who does not breathe at birth; it is a resuscitation algorithm presented with images and very few words.

The colors on the **Action Plan** poster signify the level of care needed by the baby. For example, green represents the Routine Care needed by all babies; yellow signifies the key concept of “The Golden Minute”—the first minute after birth, when prompt action to stimulate breathing or begin ventilation is vital to a successful outcome. Finally, the red zone indicates the need for more prolonged or advanced resuscitation. At this point, the Action Plan links to the advanced techniques of resuscitation taught in the Neonatal Resuscitation Program of the American Academy of Pediatrics.

The graphic, pictorial style of the tool helps learners recognize babies who need help to breathe and links together all the materials. For example, the images from the **Flip Chart**, which is the core tool for facilitating the learning, matches/links to those used in the Action Plan and the Learner Workbook, as shown in Figure 14.

Skills practice forms the foundation of the HBB course and the **Learner Workbook** includes a variety of exercises. Individual skills are learned and practiced for each step in the Action Plan, and exercises help learners integrate these skills, for each section of the Action Plan. The **NeoNatalie Newborn**

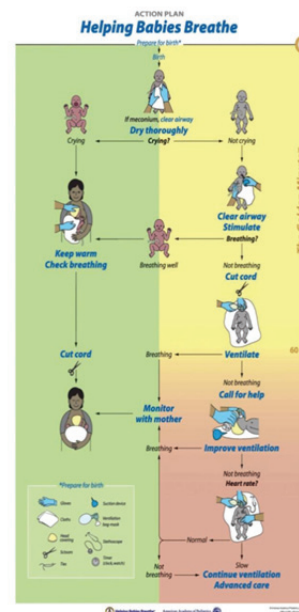
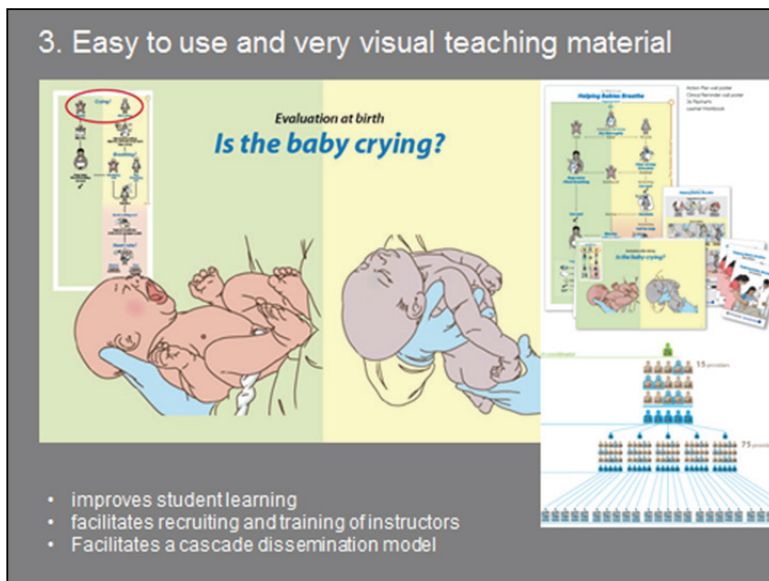


Figure 14. “Matching Images” Link Materials, Reinforcing Key Content



Simulator—the mannequin upon which skills are practiced—was developed by Laerdal Foundation and is “purpose-built,” with crying, breathing and heart rate (umbilical cord pulse) features. It is a low-cost simulator and comes complete with an Ambu bag-valve-mask unit, as well as a suction bulb. In support of the UN MDG 4, Laerdal has committed to providing the NeoNatalie Newborn Simulator and the NeoNatalie resuscitation tools to developing countries on a not-for-profit basis through 2015.

The mannequin ships flat, but when filled with 2 liters of warm water, it has the weight, the warmth and the tone of a baby who needs help to breathe. The skills learned focus on maintaining a clear airway, stimulation and ventilation as indicated by the newborn’s condition. The baby is the focus for learning in pairs, with an educational methodology that emphasizes facilitation of learning. Participants work together to help one another learn skills, recognizing that we all learn best when we are teaching. The materials are very useful for learning a new skill, as well as for refresher training at a facility.

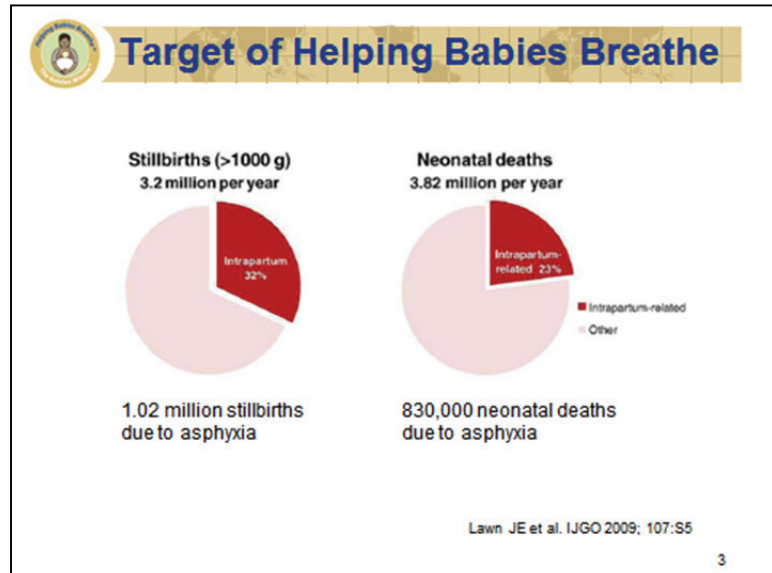
The USAID GDA provides support to countries for HBB implementation, taking into consideration the need to support national rollout plans based on strong local ownership.

Helping Babies Breathe Global Educational Program: Presentation of Field Testing Results

Nalini Singhal, Professor of Pediatrics, University of Calgary, and Volunteer, American Academy of Pediatrics, presented results from the evaluation of the HBB training in Kenya and Pakistan.

The Helping Babies Breathe (HBB) program was developed to address one of the major causes of newborn deaths: failure to breathe within the first minute of birth. Globally, nearly 4 million newborns die each year in the first month of life. As shown in Figure 15, about one-quarter of these die because they fail to breathe at birth—a simple definition of asphyxia. In addition to these, there are over 3 million babies who are termed stillbirths (Lawn et al. 2009), among which are some babies who just are not breathing but who can be helped with simple measures. Each year hundreds of thousands of babies could be helped to breathe at birth.

Figure 15. Estimated Annual Newborn Deaths Due to Asphyxia



In most African countries, fewer than half of births take place in health facilities. Much lower is the percentage of births that take place where equipment is available to help a baby breathe. And in only a small percentage of births is there someone present who has the knowledge and skill to help a baby breathe (Wall et al. 2009). So the focus of Helping Babies Breathe is to meet these needs.

Part I: Interventions for Impact in Obstetric Health

What can be done in the face of such a large burden of mortality and limitations of workforce? The answer lies in an understanding of the science of resuscitation. For 99% of babies, simple interventions can be lifesaving. All babies need assessment and routine care at birth, and for most, such simple care is enough. For babies who do not breathe at birth:

- Many will respond to the basic steps of drying and warmth, plus clearing the airway and specific stimulation to breathe;
- Only a small percentage of babies will require bag and mask ventilation; and
- Less than 1% of babies require advanced methods of resuscitation, such as chest compressions and medications.

By focusing on the timely delivery of the essential interventions of drying, warmth, clearing the airway, stimulation to breathe, and bag and mask ventilation, many babies can be saved.

Helping Babies Breathe is an educational program built on scientific principles and a wealth of evidence coming from the ILCOR guidelines. Again, the content of HBB has been harmonized with international health policy and guidelines through WHO technical expert review. Simple, evidence-based and learner-focused, the HBB program highlights preparation for birth (both of equipment and persons) including cleanliness, thermal management, and support for early breastfeeding, but emphasizing the key concept of “The Golden Minute”—the first minute after birth, when prompt action to stimulate breathing or begin ventilation is vital to a successful outcome. As was described in the previous presentation, the training is focused on the Action Plan and uses newborn simulators for hands-on practice.

Formative evaluation of effectiveness of HBB training (Phase 1) was conducted in Kenya and Pakistan. The program trained master trainers and providers. Training activities were conducted in small groups (six learners to one facilitator) using HBB learning materials: the Action Plan and graphically linked Flip Chart and Learner Workbook for the learners, as well as the instructional guide for facilitators. The skills were standardized using the newborn anatomical simulators and case scenarios; participants worked together to help one another learn skills.

The assessment tools included multiple-choice questionnaires for knowledge assessment and objective structured clinical exam (OSCE) for skills assessment of simple and complicated cases. In addition, qualitative assessment was conducted through focus group discussions.

Findings from Phase 1 indicated that the HBB training:

- Increases knowledge of immediate care at birth and interventions to help babies who do not breathe;
- Improves bag-and-mask ventilation (BMV) skills; and
- Improves the ability of birth attendants in the resource-limited setting to manage both simple and complicated cases of newborns who do not breathe spontaneously.

Similarly, testing of the field implementation of HBB clinical training conducted in India, Tanzania, Kenya and Bangladesh demonstrated that the training improves recognition of babies not breathing at birth and decreases number of stillbirths. While the number of neonatal deaths remained unchanged, the specific need for resuscitation decreased.

Overall, the HBB training program is simple, evidence-based, low-cost and effective, easy to integrate, hands-on, empowers the learner and promotes life-long learning. It was well-received

in the field where it visibly improved knowledge and skills, but actual clinical impact needs further study.

The presentation was followed by a demonstration of HBB training using the NeoNatalie neonatal simulator conducted by Nalini Singhal and Georgina Msemo.

Discussion that followed the presentations focused on the issues of HBB training:

- In discussion of the relationship between skilled birth attendants and level of quality of care, an emphasis must be made to ensure there are skilled birth attendants available at deliveries. However, there is still a need for health providers to have appropriate skills.
- How is stillbirth rate reduced by HBB? A baby that is not breathing may be classified as stillbirth if no interventions are taken to initiate breathing.
- Checklists and job aids are available as part of the HBB learner's package. Development of more new job aids is planned, depending on what is required at the country level. An HBB implementation guide and M&E tools are also in development.
- HBB training should be part of pre-service education (nursing schools), as well as in-service and refresher clinical training.
- In the absence of bag-and-mask ventilation (BMV), mouth-to-mouth-ventilation should not be conducted due to the risks involved (e.g., risks of HIV). Therefore, it is important to make sure a bag and mask are available!
- Other HBB training materials (implementation guide, video) are expected in July 2011.

Group and Team Activities

SKILLS AND DISCUSSIONS SESSIONS

Skills and discussions sessions, held in the afternoon of Day 2 of the Meeting, provided participants with an opportunity to observe procedures that were discussed in the presentations and practice new skills. It was also an opportunity for participants to clarify statements, ask questions and share ideas in a small group setting. Seven stations were set up throughout the conference rooms; each session lasted 25 minutes with discussion, and then was repeated two more times.

"Our primary reason for doing this is to detect all the pre-eclampsia that there is in the community."

Harshad Sanghvi, Jhpiego

Skills Session 1: Screening for and Detection of PE/E. Facilitators: Harshad Sanghvi, Kusum Thapa and Abigail Kyei.

Participants reviewed specifics of BP measurement and proteinuria testing and observed demonstration of the use of new and innovative screening tools at the community level. After the demonstration, the participants discussed the following issues:

- Cost-effectiveness of a urine testing pen: It costs less than \$5 to produce and will last through 3,000 tests.
- When will the final product be ready? Best case scenario, between 6 to 12 months. It is important to reach the poor, the uneducated and the rural—who are being marginalized by our health systems.

Part I: Interventions for Impact in Obstetric Health

- BP cuff: It is very low-tech; even a non-literate person can use this. It will be less than \$5 total cost. We want a low price so it can get out to the periphery.
- Why not a solar charger? Solar chargers will add \$3–\$4 to the cost. We want to keep the total cost under \$5.

Skills Session 2: Induction of Labor. Facilitators: Matthews Mathai and Sheena Currie.

The goal of this session was to review the new WHO guidelines on induction of labor by using three case studies to demonstrate recommended approaches. The guidelines are currently available at the following link and will be published in the next few months: www.who.int/reproductivehealth/publications/maternal_perinatal_health/9789241501156/en/index.html

Participants learned how to prepare a solution for oral administration of misoprostol. In many countries, misoprostol is available only in 200 mcg tablets, as this is the prescribed dose for AMTSL. The dose for induction is 25 mcg administered every 2 hours. To prepare the smaller dose, providers must use a blade to cut the 200 mcg tablet into eight individual pieces. The facilitators asked a volunteer to demonstrate how to divide the tablet and participants quickly realized how difficult it is to accurately prepare the dose using this technique. Then facilitators demonstrated how to dissolve the 200 mcg tablet into 200 mL of water to prepare a solution that can be administered orally in 25 mL doses every 2 hours.

Because misoprostol is a powerful drug, an overdose can have dangerous effects on the patient. Several participants shared experiences of using misoprostol for induction of labor and their patient's uterus then rupturing—possibly the effect of an overdose. Following these traumatizing events, the providers were reluctant to use the drug again.

Participant Munir Kassa, a provider from the Dire Dawa Health Bureau in Ethiopia, said, “I know misoprostol is cheap, effective and available, but there is no way to accurately divide the 200 mcg tablets into 8 pieces, so we are not using it in the facility. When I return, I will start using the drug again because the risk of rupture is much lower now that I am confident I can prepare the accurate dose.”

“When I return I will start using the drug again because the risk of rupture is much lower now that I am confident I can prepare the accurate dose.”

Munir Kassa, Ethiopia

“Providers have various experiences with different drugs and they lose confidence with a bad experience,” Sheena Currie said. “They need to be reassured that the evidence supports misoprostol, while recognizing the difficulties and safety aspects of getting the right dosage from a 200 mcg tablet.”

Facilitators also demonstrated use of the balloon catheter, a mechanical method of induction that ripens the cervix and induces labor. Participants appreciated the opportunity to gain hands-on experience with methods they learned about during the conference presentations. “It is very useful to have the hands-on sessions following the theory-based plenaries,” said Tambudzai Rashidi, the Chief of Party for MCHIP Malawi. “I will be recommending the addition of these practical skills to the BEmONC trainings in Malawi since they enhance individuals’ understanding.”

Skills Session 3: Implementing MgSO₄ Protocols. Facilitators: Blami Dao and Catherine Carr.

In this session, participants had an opportunity to discuss how to implement MgSO₄ protocols for management of severe PE/E when faced with issues of different concentration, different routes of administration and different dosing. A sample job aid for MgSO₄ administration and a monitoring template were distributed and discussed. Participants appreciated detailed explanations of the calculation of loading and maintenance doses, the dosing regimen and monitoring of toxicity; they commented on the need for standard operating procedures and protocols.

As a recommendation for the future, participants suggested that it would be helpful to make demonstration and practice of dilution and administration of MgSO₄ in a simulation a component of a training event. Participants also brought up the following issues:

- It would be very helpful to have strength per mL on the vial of the drug to help providers to give the accurate dosage.
- At most times when MgSO₄ is given, it is an “underdose”—people need to watch out for this!
- Need to advocate for change of color-coding of these very important drugs that can be life-threatening if misused. Lignocaine and MgSO₄ are in VERY similar vials; calcium gluconate and MgSO₄ are in similar ampules.
- Do we need potency testing for MgSO₄?
- Need to create a job aid for managing overdose of MgSO₄, for situations with and without calcium gluconate.
- Need to develop easy to-use job aids for frontline health care providers.



Catherine Carr, Jhpiego, explains loading dose of MgSO₄ during the skills session.

Skills Session 4: Introduction of the Uterotonic Decision-Making Tool. Facilitators: Susheela Engelbrecht and Steve Brooke.

In this session, participants reviewed the draft document “Uterotonic selection tool for prevention and treatment of PPH: A guide for policy makers, pharmacy managers and MOH” and the accompanying tool “Selecting a rational mix of uterotonic drugs,” developed by PATH.

The following issues related to these materials were discussed:

- This tool is a great concept that has the potential for assisting people at all levels of decision-making to choose a rational mix of uterotonic drugs.
- However, the tool, in its present form, might be difficult for country implementation and needs to be revised to make it more user-friendly.
- Suggestions were made on how to revise it to make the tool more practical. There is a possibility that, in the future, a larger document will be developed that has modules for each use of uterotonic drugs. For the moment, we will limit content in the tool to uterotonic drugs for prevention and treatment of PPH.

From this discussion, the next steps were identified: The PATH team will work with USAID's Strengthening Pharmaceutical Systems (SPS) and VSI to improve the quantification piece of the tool, and VSI will work with the PATH team to make the tool more user-friendly.

Skills Session 5: Pre-Eclampsia/Eclampsia E-Learning Course. Facilitator: Hannah Knight.

In this session, the presenter demonstrated “The Evidence-Based Management of Pre-eclampsia and Eclampsia: An Interactive E-Learning Course for Healthcare Professionals,” developed by the Maternal Health Task Force and University of Oxford. The course has two versions:

- **Basic:** For health care professionals who want to know/revise the fundamentals, and
- **Advanced:** For doctors, midwives and nurses who want to know the evidence behind the recommendations.

This course can be found online at: www.gfmer.ch/SRH-Course-2010/pre-eclampsia-University-of-Oxford.



Hanna Knight, University of Oxford, demonstrates the interactive PE/E e-learning course.

Skills Session 6: Teaching Maternity Care using MamaNatalie. Facilitators: Tore Laerdal, Ingrid Laerdal, Hannah Gibson and Angie Fujioka.



Session participants try out MamaNatalie's special features.

During this session, participants observed demonstration and practiced use of the MamaNatalie model for teaching management of childbirth and management of PPH. MamaNatalie is a birthing simulator that allows the instructor to create simulations of normal to more complex birthing scenarios. The simulator is strapped onto the instructor, who manually controls the amount of bleeding and the condition of the uterus to set the scenario for the student and then responds to the student's performance.

The instructor can also control dilation of the cervix, position and delivery of the baby, delivery of the placenta and fetal heart sounds. The baby, NeoNatalie, is a neonatal simulator that has the “real feel” of a newborn baby and can be used separately for training in neonatal resuscitation. MamaNatalie and NeoNatalie have been developed by Laerdal in response to requests for training simulators that are low-cost, durable, easy to disassemble and to clean, and culturally appropriate. More information about the simulators is available at the Laerdal Web site: www.laerdalglobalhealth.com.

During the session, participants were interested in the following issues:

- How much does the model cost? Approximately \$150 USD per MamaNatalie, including NeoNatalie. It is being produced in China and should be ready for distribution in June. The organization will likely

“MamaNatalie is fantastic because it makes learning easy and demonstrates all skills of a midwife.”

Hannatu Abubakar, Nigeria

charge developed countries a higher rate to afford to sell the models at cost to low-income countries.

- Can the model simulate twin delivery? Yes, two NeoNatalies can be used in the MamaNatalie to simulate twin birth.

Participants' feedback:

"The MamaNatalie is so real. It is great for training." ~Rose Macavley

"It's fantastic. It's good to be used for training. It's natural. But before you are the MamaNatalie, you have to know how to use it to contract the uterus, pull out the placenta, and cause the hemorrhage." ~ Jean Pierre Ratovaoc, Ob/Gyn, Madagascar

"MamaNatalie is fantastic because it makes learning easy and demonstrates all skills of a midwife; I would advocate for this." ~ Hannatu Abubakar, Midwife, Nigeria

Skills Session 7: Balloon Tamponade and Other Techniques. Facilitators: Elizabeth Abu-Haydar and Sylvia Deganus.

Participants observed and discussed demonstration of innovative clinical interventions/ techniques for management of PPH using anatomic models. The demonstrations included balloon tamponade to stop PPH, plastic blood drape to assess amount of postpartum bleeding, and non-pneumatic anti-shock garment that counteracts shock and decreases blood loss by applying direct counter-pressure to the lower parts of the body.

Demonstrations and the following discussion highlighted several issues:

- Use of water with balloon tamponade should not be encouraged because of possible rupture; using saline is safer.
- Hospitals usually do not have condoms in stock; possibly need to use latex gloves.
- Should the anti-shock garment be used on a woman not going into shock?
- The anti-shock garment is often being used as a treatment for PPH rather than as a step to reducing the fatal symptoms. People have to be trained on how to use it and why to use it.



Dr. Sylvia Deganus demonstrates a plastic blood drape to assess amount of postpartum bleeding.



SUMMARY OF INTERVENTIONS FOR REDUCTION OF MORBIDITY AND MORTALITY DUE TO PPH AND PE/E

Groups that included country representatives and international experts convened to discuss how to prevent and manage PPH and PE/E in the settings with and without a skilled provider. The result of group work was recorded in large matrices, represented here in Tables 1 and 2.

Table 1. Interventions for Reduction of Morbidity and Mortality from Postpartum Hemorrhage

	WITHOUT SKILLED BIRTH ATTENDANT	WITH SKILLED BIRTH ATTENDANT
PREVENTION	<ul style="list-style-type: none"> Community awareness – behavior change communication (BCC)/information, education and communication (IEC) Birth preparedness/complication readiness (BP/CR) include men Promotion of skilled attendance at birth Family planning and birth spacing Detection and treatment of signs of anemia Iron/folate supplement, de-worming, and IPT to prevent anemia Use of mobile phone to connect to skilled providers when needed Misoprostol for routine third stage use through ANC and community distribution systems Train community on measuring blood loss accurately Oxytocin in Uniject to TBA, CHW 	<ul style="list-style-type: none"> Community awareness – BCC/IEC Quality Antenatal care (including BP/CR) Free maternal services at facility Detection and treatment of anemia Iron/folate supplement, de-worming, and IPT to prevent anemia Family planning and birth spacing Use of partograph to reduce prolonged labor Limiting episiotomy in normal birth Active management of third stage of labor (AMTSL) with oxytocin (1st line) or misoprostol (2nd line) Routine inspection of placenta for completeness Routine inspection of perineum/vagina for lacerations Routine immediate postpartum monitoring Measure blood loss accurately Kind and respectful care Keep mother/baby together and skin to skin to promote breastfeeding
MANAGEMENT	<ul style="list-style-type: none"> Birth planning Community emergency planning Transport planning Referral strategies Use of misoprostol to treat PPH Use of Non-pneumatic Anti-Shock Garment Breastfeeding/nipple stimulation Uterine massage Empty bladder (urinate) Measure blood loss accurately Orally replace fluids Position of woman to prevent shock (feet raised above level of heart, keep warm) External bimanual compression Oxytocin in Uniject to TBA, CHW Pressure on laceration 	<ul style="list-style-type: none"> Active triage of emergency cases Rapid assessment and diagnosis Breastfeeding/nipple stimulation Accurate measurement, diagnosis of blood loss Emergency protocols for PPH management Use of non-pneumatic anti-shock garment (NASG) Condom uterine tamponade Basic emergency obstetric and newborn care (EmONC) <ul style="list-style-type: none"> – Intravenous fluid resuscitation – Manual removal of placenta, – Uterine curettage for placental fragments – Parenteral oxytocics and antibiotics – Uterine massage – Bimanual aortic compression – Aortic compression – Emptying/catheterization of the bladder – Placenta inspection – Vulvar, vaginal, cervical inspection – Suturing tears Comprehensive EmONC <ul style="list-style-type: none"> – Blood bank/blood transfusion – Operating theater/surgery – Uterine rescue surgical techniques: b-lynch, square sutures

Table 2. Interventions for Reduction of Morbidity and Mortality from Pre-Eclampsia/Eclampsia

	WITHOUT SKILLED BIRTH ATTENDANT	WITH SKILLED BIRTH ATTENDANT
PREVENTION	<ul style="list-style-type: none"> Birth planning and preparedness (include men) Promotion of SBA at birth Promotion of early and continuing ANC from SBA Family planning and birth spacing Sensitization and counseling about pre-conceptual care (include men) Promotion of use of maternity waiting homes Community awareness for danger signs and emergency planning including transport Home BP screening Home urine testing Nutrition education to increase dietary calcium Calcium supplementations, calcium fortified foods Low dose aspirin Behavior change communication about PE/E 	<ul style="list-style-type: none"> Birth planning and preparedness (include men) Promotion of SBA at birth Counseling for family planning and birth spacing Community awareness for danger signs and emergency planning including transport Maternity waiting homes Calcium supplementation, calcium fortified foods Nutritional education to increase dietary calcium Low dose aspirin Appropriate and high quality ANC with screening for hypertension and urine protein at each visit Tracking of mothers with hypertension if they do not return to ANC for follow-up Behavior change communication about PE/E Detection and treatment of chronic hypertension Increased monitoring for patients with h/o PE, and/or hypertension
MANAGEMENT	<ul style="list-style-type: none"> Birth planning (including advocacy with men) Emergency planning including transport and where to go Community education for recognition of dangerous situations/need for emergency response Community emergency planning Strategies for timely and appropriate referral Mobile phone to connect CHW to skilled provider Obstetric first aid related to eclampsia 	<ul style="list-style-type: none"> Routine clinical drills to maintain provider skills to manage PE/E Quality of care initiatives to improve appropriate management of severe PE/E Rapid initial assessment and diagnosis of PE/E Anticonvulsant therapy (MgSO₄) Antihypertensive therapy Timed and prompt delivery including use of partograph during labor Induction protocols including use of misoprostol Cesarean section Anticipate asphyxiated baby Timely referral strategies to CEmONC facility Lab testing if available (blood grouping and cross-matching, complete blood count, renal and liver function testing, bleeding time) Antenatal steroids for fetal lung maturity Appropriate monitoring (fetal monitoring, blood pressure, respiratory rate, deep tendon reflexes), fluid balance (fluid intake and urine output) Immediate postpartum monitoring Health system financing (including management of PE/E) Health system strengthening Pharmaceutical system strengthening to ensure drug availability

Closing Activities

INDIVIDUAL REFLECTIONS

Organizers and participants shared their reflections about the meeting and moving forward with implementing/expanding programs to address major maternal mortality causes in their countries. What follows are highlights from this final event.

Dr. Abdalla Mergani, South Sudan, noted that his country is “Africa’s newborn nation” and asked for support and encouragement as the country works to improve maternal and neonatal health.

Dr. Koki Agarwal, MCHIP, commented that she felt [at the Meeting] like she was “back in medical school due to the high-level technical content.” She focused on key elements of the conference—learning, connecting, commitment and hope.

Dr. Harshad Sanghvi, Jhpiego, noted that there has been global progress in reducing maternal deaths. He said he wished for this to continue through implementation of high-impact interventions but was concerned about increasing access to poor-quality care. The promise of SBAs cannot be realized without emphasis on quality, respectful care, infrastructure that is functional and supplies what is needed, and recognition and reward for those on the frontline. “Health facilities do not support the poorest, least educated, most isolated,” said Dr. Sanghvi. “What can we do for them? Need to take care to the community.” Our focus must be on high-impact interventions; we should make them commercially available, improve quality of care and ensure the enabling environment for providers.

Dr. Jérémie Zoungrana, Rwanda, suggested that countries look for local solutions close to home and cited Rwanda’s experience as a good example—“When you have a problem, the solution is sitting at your gate.” He commented that all participants were now prepared with information and analysis and will return and revisit information in their own countries.

Peggy Chibuye, Zambia, said that strengthening midwifery is a recognized need in all of the countries represented, as midwives are the main providers of maternal and newborn care. An acute shortage of midwives means there is an acute need to address pre-service training. She suggested that more countries consider “direct entry” midwifery (Zambia has started) as a more effective and efficient way to train midwives. “There are interested nurses out there who want to be midwives,” she said; “We need to get them into pre-service education soon rather than making them wait.”

Alice Levisay, PATH/Oxytocin Initiative, congratulated everyone on a wonderful conference with lot of productive teamwork and clear outcomes to be taken forward. “We know what we know, we know what we need,” said Levisay; “The tide is beginning to turn... and societies are making choices to save lives.”

Deborah Armbruster, USAID, said that USAID is very pleased to have supported this conference. As a group of colleagues with a similar interest to save mothers and babies was created, USAID is excited to hear how countries are actually scaling up or introducing the PPH and PE/E prevention and treatment. Dr. Armbruster said, “We have a lot of top-notch experts here, and it has been inspiring to listen to all of them.” She brought up an example of the South Sudan team—this new country is making plans because we worked during the meeting to think about what we need to do next.

Key messages of the meeting:

- Oxytocin should be available in all facilities.
- Misoprostol can make an important contribution to saving lives, particularly at the home birth.
- More work is needed on the use of oxytocin and misoprostol for induction or augmentation of labor component to make sure guidelines are updated.
- MgSO₄ should be available and used—this is even more important in the current introduction phase of PE/E.

All countries have great successes to share with each other, and the MCHIP team has put together a good resource package that will provide answers. “Let’s go forward and save lives, folks,” exclaimed Dr. Armbruster at the end of sharing her thoughts.

Group reflections and Dr. Armbruster’s energizing message were followed by a slide show that captured memorable moments of the meeting.

POSTER AWARDS CEREMONY

Mary Ellen Stanton, in the Poster Award ceremony, announced that all energetic teams are winners. A certificate of excellence and the prize trip to the International Confederation of Midwives conference in Durban in June 2011 was awarded to Zambia team.

CLOSING REMARKS

Dr. Neghist Tesfaye, Director of Urban Health/MCH Focal Point, Ministry of Health of the Federal Democratic Republic of Ethiopia, closed the meeting with thanks to the organizers and participants for choosing Ethiopia as the place for this meeting. During the last three days, we could see the global efforts in addition to African regions, Dr. Neghist Tesfaye commented; the conference was very participatory for experience-sharing. She emphasized, however, the need to focus on quality of care, to be critical in scaling up. She felt it helped to look at the big picture of implementation, as many different things need to go into implementation. And when we talk about maternal health care, it affects all levels of the health system. Another important thing from this meeting, said Dr. Neghist Tesfaye, is that we have something for both the mother and the newborn. They both go together. “I hope we go home to our countries, more energized to make more of a difference for the lives of our mothers and children,” she said, and wished everybody a good stay and a safe trip home. “When you go, take a part of Addis with you.”

PART II: HELPING BABIES BREATHE (HBB) REGIONAL TRAINING OF TRAINERS (TOT) FOR AFRICA

Of the nearly 8 million children who die every year before reaching their fifth birthday, more than 3 million are newborns who do not survive their first four weeks of life (Rajaratnam 2010). The WHO estimates that one million of those babies die each year from birth asphyxia, or the inability to breathe immediately after delivery. Most babies who are asphyxiated can be helped to breathe using simple resuscitation techniques, including the use of bag and mask ventilation, which are administered within the context of essential newborn care.

A. OVERVIEW OF NEWBORN RESUSCITATION TRAINING

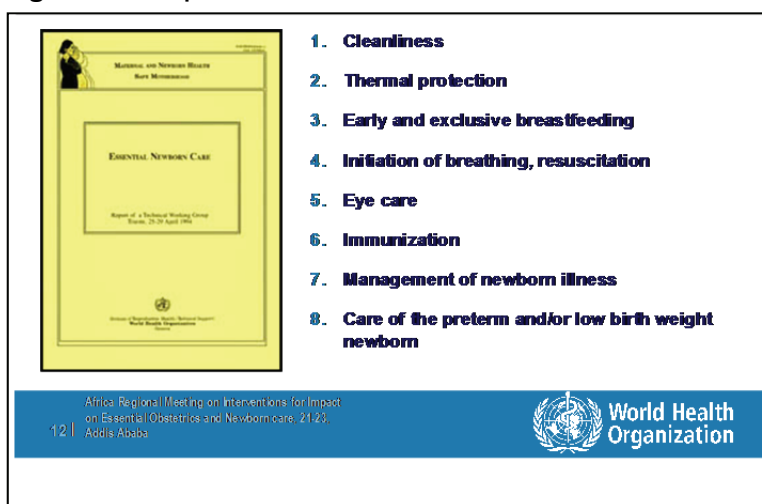
The purpose of the newborn care session of the Africa Regional Meeting was to develop experts and advocates to address newborn asphyxia by expanding their knowledge and skills in newborn resuscitation techniques and state-of-the-art newborn care interventions. The two-day training workshop resulted in motivated national and regional trainers available for the Helping Babies Breathe (HBB) initiative. In addition, the meeting stimulated discussion on the expansion and strengthening of programs for neonatal resuscitation within the context of essential newborn care.

B. ORIENTATION AND SETTING THE STAGE: PLENARY SESSION ON IMPROVING NEONATAL RESUSCITATION—23 FEBRUARY

A plenary session on Day 3 of the Africa Regional Meeting (Panel #9, pages 42–49) provided an overview of essential newborn care with a focus on neonatal resuscitation and HBB in particular. Five presentations were made:

- Neonatal Resuscitation in the Context of Essential Newborn Care (ENC), by Dr. Pyande Mongi, WHO/AFRO;
- Prevention of Newborn Asphyxia through Improved Labor Care, by Dr. Jeffrey Smith, MCHIP;
- MCHIP Newborn Health Quality of Care Survey Results from Ethiopia and Rwanda, by Dr. Joseph de Graft-Johnson, MCHIP;
- Introduction of the HBB Training Materials, by Tore Laerdal, Laerdal Medical AS and the Laerdal Foundation for Acute Medicine; and
- Presentation of HBB Field-Testing Results, by Dr. Nalini Singhal, American Academy of Pediatrics.

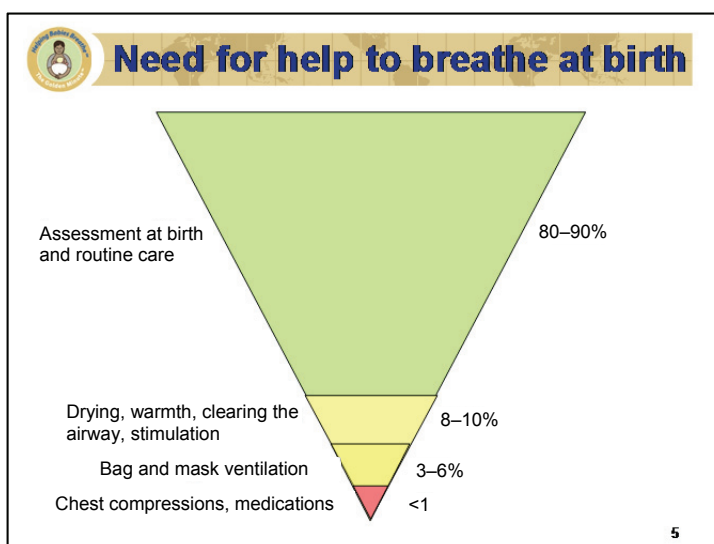
Figure 16. Components of Essential Newborn Care



The plenary provided information for policymakers, program managers, donors and service providers on the key components of ENC (Figure 16), gaps in ENC and resuscitation services, and how HBB could be used to improve the knowledge and skills of providers. It also set the stage for the hands-on training of trainers that followed on 24 and 25 February 2011.

It was emphasized that the majority of asphyxiated babies could be resuscitated by stimulation and ventilation by bag and mask only (see Figure 17).

Figure 17. Proportion of Newborns Requiring Intervention to Breathe



C. HELPING BABIES BREATHE TRAINING OF TRAINERS—24, 25 FEBRUARY

1. Opening Session



HBB Opening Ceremony

The opening session was facilitated by Dr. Joseph de Graft-Johnson, Newborn Health Team Leader for MCHIP. **Dr. Koki Agarwal**, Director of MCHIP, welcomed participants. She expressed her appreciation of the interest of 137 participants from 24 African countries (and three non-African countries) in addressing newborn asphyxia. She also shared a personal experience from Bangladesh, where she interacted with an auxiliary nurse-midwife who had trained in HBB in rural Habiganj District and saved a baby using bag-and-mask ventilation (BMV). And this occurred after the baby's parents had come to believe that their baby was a stillbirth! Dr. Agarwal thanked the sponsors of the meeting, USAID, WHO/AFRO, Africa 2010, RCQHC and the Laerdal Company and Foundation, and she encouraged the participants to take this learning back to their countries to make a difference in the lives of mothers and newborns.

Dr. Lily Kak, USAID Senior Maternal and Newborn Health Advisor, also welcomed the participants and expressed her delight in how far the HBB program had come as a result of a Global Development Alliance (see Box). She described that a global pool of master trainers had been trained in Washington when the GDA was launched in 2010 and they were now cascading their learning to

USAID, through its Global Development Alliance model, is partnering with the following on the *Helping Babies Breathe* initiative:

- The Eunice Kennedy Shriver National Institute of Child & Human Development (NICHD)
- Save the Children
- Laerdal Medical AS
- American Academy of Pediatrics (AAP)

Part II: Helping Babies Breathe (HBB) Regional Training of Trainers (ToT) for Africa

all levels within their countries. She expressed the hope that similarly positive efforts would result from this, the first ever Africa Regional HBB training of trainers. She explained how the GDA was formed among USAID, NICHD, Save the Children/Saving Newborn Lives, American Academy of Pediatrics (AAP), Save the Children and Laerdal Medical AS—and described the role of each in the GDA. Dr. Kak also introduced Dr. Troy Jacobs and Karen Fogg from USAID, who will be supporting country-level HBB rollout in Africa.

Dr. Neghist Tesfaye, Director of the Reproductive and Child Health Division, Ministry of Health, Ethiopia, welcomed the participants as the host from Ethiopia. She highlighted the contribution of newborn mortality in Ethiopia to child mortality and reiterated that Ethiopia could not reach MDG 4 unless newborn mortality—and specifically, newborn asphyxia—was addressed. HBB training is ongoing in Ethiopia, she shared, and the Ministry of Health is committed to scaling it up at every level. **Dr. Neghist Tesfaye** also served as a lead facilitator in the HBB TOT.

Dr. Nalini Singhal, American Academy of Pediatrics, is one of the main authors of the HBB curriculum. She spoke on the simplicity of the curriculum and the need to “unlearn” some of the practices participants may have learned many years ago. She emphasized that HBB was designed to reach the most peripheral-level providers, and that policymakers should not see it as a vertical program. “HBB should always be considered part of the essential newborn care curriculum,” she reminded participants.

“HBB should always be considered part of the essential newborn care curriculum.”

Nalini Singhal

Dr. Pyande Mongi, Director of Maternal and Newborn Health, WHO Regional Office for Africa (AFRO), gave a presentation on the status of the newborn in Africa. She highlighted the main causes of mortality and the interventions available to address the burden. WHO/AFRO has developed an Essential Newborn Care curriculum that has been used in over 20 countries to train providers. She stated that the newborn asphyxia management module of the curriculum could be replaced by HBB where appropriate, according to specific country needs.

“The newborn asphyxia management module of [WHO’s ENC] curriculum could be replaced by HBB where appropriate, according to specific country needs.”

Pyande Mongi

Dr. Stella Abwao, the lead coordinator for HBB at MCHIP, subsequently reviewed the workshop agenda, provided details on logistics and explained the participant roles. She then wrapped up the opening session.

See Appendix E for Part II objectives and detailed agenda.

2. Participants

A total of 121 participants from 27 countries were trained as HBB trainers (Table 3). An additional 16 donors, program managers and policymakers received an in-depth, hands-on orientation on the use of the newborn resuscitation mannequin, the NeoNatalie simulator, and the HBB program generally, bringing the total number of participants to 137.

Twenty-six (26) facilitators from eight countries—including 11 from Ethiopia—led the training. A detailed list of participants, observers, facilitators and staff is available in Appendix F.

3. HBB Course Design and Learning Materials

The HBB course is designed as a competency-based skills training of trainers. Session 1, the “Provider Component,” focused on refreshing participants’ clinical skills, and ensured that all were familiar with the HBB materials and messages. This session also gave participants an opportunity to “be” the learners they would eventually be training. Session 2, the “Facilitator Component,” focused on training participants in HBB facilitation skills and providing them the opportunity to practice their facilitation skills for the HBB skills course. Participants were assigned to 20 groups of six learners each, spread out in three different rooms. A pre-test (Appendix G) was administered to all participants.⁴

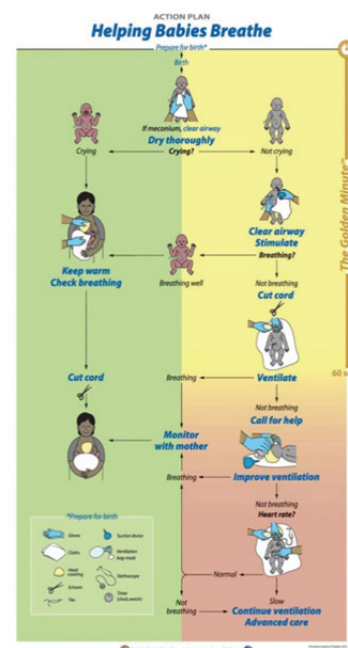
Participants were then introduced to the HBB materials used throughout the course, including the NeoNatalie mannequin and resuscitation equipment, the HBB Learner Book and the HBB Flip Charts and Action Plan/Poster 3 (shown at right). In each group of six, participants learned in pairs using the NeoNatalie mannequin and reference materials. A facilitator was assigned to each group, while a lead facilitator—in each of the three allocated rooms—demonstrated various skills and continuously provided pertinent information to the larger group. All course facilitators had met for a preparatory meeting on 23 February and followed a Facilitator’s Guide (Appendix H) during the training sessions.

Table 3. Participants by Country

Angola	7	Nepal	1
Botswana	1	Nigeria	8
Congo-Brazzaville	1	Rwanda	7
Equatorial Guinea	1	Seychelles	1
Ethiopia	24	South Africa	1
Ghana	5	South Sudan	4
Kenya	4	Swaziland	1
Lesotho	1	Sweden	1
Liberia	7	Tanzania	9
Madagascar	2	Uganda	7
Malawi	7	USA	3
Mali	1	Zambia	7
Mauritius	1	Zimbabwe	7
Mozambique	2		
Total			121



NeoNatalie mannequin, HBB flip chart and resuscitation equipment



⁴ Results described in *Participant Evaluation* section below.

4. Session One: Provider Component

The Provider Component of the HBB TOT gave participants the opportunity to experience the HBB clinical skills course as actual course participants would—learning, practicing and being assessed on the knowledge and skills required for HBB. They also observed lead facilitators in the role they would be adopting to teach the course themselves after the Meeting.

A. Overview

Participants were taken through the following HBB training sessions, allowing for questions and discussion throughout. These sessions were designed to enable the participants to:

- Describe the linkages among HBB materials
- State the key messages of Helping Babies Breathe
- Carry out all of the four key exercises in Helping Babies Breathe: (1) Preparation, (2) Routine care for all babies, (3) The Golden Minute SM, and (4) Continued ventilation with normal or slow heart rate
- Identify regional practices in newborn resuscitation through group discussion and questions
- Demonstrate mastery of bag-and-mask ventilation (skill check)

B. Opening Visualization Exercise

The first activity was a visualization exercise.

Participants were asked to follow these instructions:

Close your eyes and imagine the following in sequence. A baby is born; the baby is not breathing; there is no one to help the baby. The baby dies.

Participants were asked to reflect on this scenario. With their eyes still closed, participants were then asked:

Imagine another scenario in which the baby is born and not breathing, but you are there to help the baby breathe.



Opening visualization exercise

“As a birth attendant skilled in Helping Babies Breathe, you can save the lives of babies. You must be present at birth and prepared to take immediate action. By one minute after birth—the Golden Minute—a baby should be breathing well or you should be providing ventilation.”

Helping Babies Breathe Learner Workbook

This exercise is used to assist participants to reflect on what their feelings would be if they resuscitated a baby who could not breathe. It also helps to reinforce the critical importance that every birth be attended by a person skilled in resuscitation.

C. The Four Key Exercises in Helping Babies Breathe

- **Preparation for a Birth:** Facilitators then demonstrated and participants practiced the steps necessary to prepare for a birth. Each identified a helper and reviewed the emergency plan. The area was prepared for delivery and participants washed their hands. They then prepared for ventilation and checked all equipment.
- **Routine Care:** Facilitators demonstrated and participants practiced routine care provision to the newborn. Participants dried the baby thoroughly and, if meconium was present,

cleared the airway prior to drying. They evaluated the baby's cries, kept the baby warm, checked its breathing and clamped or tied the umbilical cord.

- **The Golden Minute:**

Part I (clear airway and stimulate breathing): Facilitators demonstrated and participants practiced proper positioning of the baby's head, clearing of the airway, stimulating breathing and evaluating breathing. Working in pairs, one participant took the role of the skilled birth attendant, while the other provided the response of the baby and acted as a helper when needed. Participants then switched roles.

Part II (ventilation): Facilitators demonstrated and participants practiced in pairs the initiation of ventilation, ventilation with bag and mask, and evaluation of breathing.

- **Continued Ventilation with Normal or Slow Heart Rate:** Facilitators demonstrated continued ventilation of a baby with a normal and slow heart rate. Participants practiced calling for helping and improving ventilation, evaluating the baby's heart rate, continuing ventilation and monitoring with the mother, continuing ventilation and activating the emergency plan, and support to the family.



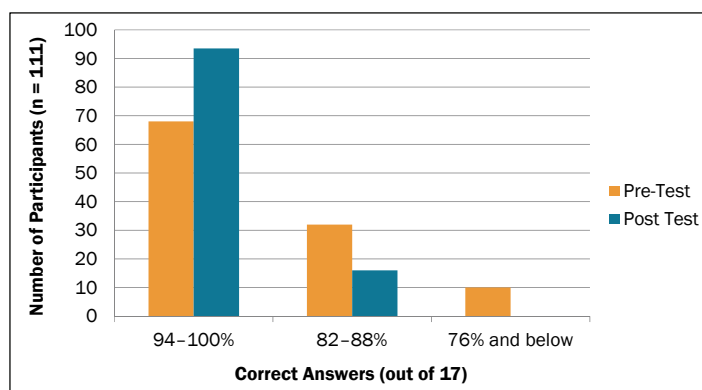
Tore Laerdal demonstrates bag & mask ventilation during the Golden Minute

D. Participant Evaluation

Knowledge Test: Participants took a 17-question newborn resuscitation knowledge test before and after the Provider Component of the training during Session 1 (Appendix G). As shown in Figure 18, the post-test results reflected an improvement of participants' knowledge. Whereas 61% of participants scored 94% or higher (i.e., perfect score or one incorrect answer) on the pre-test, 86% attained that score in the post-test. While 9% of participants scored 76% and below (i.e., four or more incorrect answers) on the pre-test, no participant scored below 82% (i.e., three or more incorrect) on the post-test. The purpose of the testing activity was to both test participants' knowledge and demonstrate how to administer the test and share its results with trainees.

Skills Assessment: Throughout the course of HBB Session 1, facilitators assessed the clinical resuscitation skills of participants as providers (see Appendix G for

Figure 18. HBB Pre- and Post-Test Results



Practicing bag and mask ventilation

BMV and OSCE A and B⁵ assessment tools). This was both a means to demonstrate how to assess skills using the HBB tools, as well as an opportunity for participants to demonstrate that they possessed the necessary clinical skills to teach others in the future. After the training, all participants demonstrated the ability to correctly provide routine care for babies breathing well, and achieved competency in following the correct steps for using the bag and mask for resuscitating asphyxiated babies.

5. Session Two: Facilitator Component

These HBB training activities were designed to enable participants to:

- Describe the evolution and purpose of the Helping Babies Breathe training program
- Demonstrate competent presentation of HBB content, including key messages from the Facilitator Flip Chart, and incorporation of all the HBB learning materials
- Explain the interaction that occurs between a pair of HBB learners using the neonatal simulator (roles of learner/teacher/baby)
- Facilitate learning in small groups to enable participants of various ability levels to demonstrate skills in helping babies breathe
- Lead skills practice and provide feedback on skills and performance
- Moderate the experience of learners and obtain consensus on regional best practices
- Provide cultural interpretation and localization (best and potentially harmful practices)
- Create realistic scenarios
- Evaluate learner performance using the written/verbal knowledge check, as well as OSCE A and B
- Prepare and supervise participants in continued learning in the workplace
- Access resources to plan and evaluate courses
- Explain the integration of HBB with other interventions according to the regional implementation plan



Practicing facilitation

The Facilitator Component of the HBB TOT gave participants the opportunity to act as facilitators and practice their HBB facilitation skills.

Participants were given opportunity, in turns, to facilitate several of the course components. They were able to practice and present to the other learners an overview of provider course objectives and supplemental material. They also put to use facilitation techniques. Similar to the process during Session 1, the inducting facilitators followed through on the opening visualization. They went on to present the content of the Facilitator Flip Chart and ensured that everyone practiced the use of the chart from page to page, as well as continued interaction within each groups.

⁵“The Objective Structured Clinical Evaluations (OSCEs) may be used as practice and/or qualifying evaluations. OSCE A examines the skills and decision-making in Routine Care and the initial steps of The Golden MinuteSM. Learners must correctly perform 10 of 13 actions to successfully complete this OSCE. OSCE B examines the skills of bag/mask ventilation and assessment of heart rate. Learners must correctly perform 14 of 18 actions to successfully complete this OSCE.” ~ HBB Web site

Throughout the above-described activities, participants demonstrated and practiced techniques to facilitate learning in a manner consistent with the varying abilities of participants to bring all of them up to the same level. They also practiced the administration of OSCE A. All sessions included related discussions and question-and-answer sessions, and encouraged continued learning at the workplace. The lead facilitators provided guidance and concrete feedback to help participants make necessary corrections and improvements to their facilitation techniques. They requested “repeat demonstrations” as appropriate.

6. Discussion of HBB Implementation at the Country Level

In each of the three large groups, participants reviewed the AAP Draft HBB Implementation Guide and discussed related issues following a discussion guide. Highlights from those discussions are summarized below.

A. Goal of Country-Level Implementation of HBB

Participants agreed that the goal of country-level HBB implementation is to ensure all newborns have access to a birth attendant who is knowledgeable and skilled in basic neonatal resuscitation, using the adapted/adopted HBB training curriculum where appropriate. The ultimate goal is to reduce the percentage/number of babies who die as a result of asphyxia.



Group discussion

B. Critical Steps for HBB Implementation

Most country representatives stated that the Draft Implementation Guide should acknowledge that countries are “not starting from scratch” and that resuscitation is already happening. However, all acknowledged the need to greatly improve resuscitation skills in various countries. Participants identified the following as critical steps for implementing HBB in their home countries:

- Conducting a situational gap analysis
- Seeking national consensus on HBB, a process that should be led and owned by the Ministry of Health
- Reviewing and revising of relevant national MNH plans and policies to include HBB
- Integrating HBB with the existing essential newborn care, IMNCI and Life-Saving Skills (LSS) components within programs (These should place more emphasis on HBB where necessary.)
- Developing a rollout plan for HBB training (**OR**, for those who already have a plan for neonatal resuscitation: reviewing the plan to identify gaps and ways the plan can be strengthened using HBB)
- Developing a monitoring and evaluation—as well as documentation—plan for HBB
- Forming a team of core master trainers
- Incorporating HBB into pre- and in-service training
- Identifying partners and mobilizing resources
- Engaging the private sector
- Procuring equipment
- Developing behavior change communication (BCC) materials to encourage a change in community attitudes toward newborns

Part II: Helping Babies Breathe (HBB) Regional Training of Trainers (ToT) for Africa

- Engaging professional associations
- Instituting a system for HBB supportive supervision and mentoring, as well as for quality assurance
- Considering ways to ensure access to HBB at both community and facility levels

7. HBB Closing Ceremony and Presentation of Certificates



HBB training participants after certificate ceremony

At the end of the last HBB session on 25 February, a closing ceremony was held—facilitated by **Dr. Joseph de Graft-Johnson** and presided over by a distinguished panel. Dr. de Graft-Johnson highlighted the central importance of Ministry of Health buy-in, participation and follow-up. “We want to have a national program but to do so, it must be Ministry of Health owned and led,” remarked Dr. de Graft-

Johnson. “Let us bring them on board and let them lead. We come in as support, not to lead.” He then asked each panelist to identify critical next steps for country implementation of HBB.

Tore Laerdal, Chairman of Laerdal Medical AS and Executive Director of The Laerdal Foundation for Acute Medicine, expressed how proud Laerdal is to support the HBB Global Development Alliance, and how the Addis meeting represented the start of a “great wave” in Africa to ensure that no baby dies trying to take his or her first breath. “We want more babies breathing and crying, and this is what this partnership stands to do,” he remarked.

Christine Omondi, Program Officer for the RCQHC at Uganda’s Makerere University, also spoke of the power and strength of the HBB partnership and remarked that when people come together, much more can be achieved. She encouraged participants to work together to improve the lives of African women and children and challenged them to “ask yourself what you are doing in your individual circle of influence to make that happen.”

“We are pleased so many countries are talking about strengthening programs and are now working closely together on HBB,” followed **Dr. Doyin Oluwole**, Director of Africa’s Health in 2010. “That for me is a true partnership and I thank everyone who is going back to their countries to get this work going.”

Karen Fogg, Health Program Advisor at USAID, encouraged participants to use what they had learned from this training to develop national plans for newborn resuscitation and to fully commit to supporting HBB as a key component of essential newborn care. “I also want to thank the Government of Ethiopia for being our gracious hosts and to all of the facilitators who helped with this training,” she concluded.

Dr. Neghist Tesfaye, representing the Ethiopian Federal Ministry of Health, asked that participants make sure that HBB is not a stand-alone program, but one that can complement other newborn resuscitation efforts. “We need to hold hands together, make sure we have all partners, and work together on this important initiative,” she stated.

Following the panelists' remarks, **Anita Gibson**, Deputy Director of MCHIP, distributed certificates of completion for the Regional Training of Trainers for Africa, Helping Babies Breathe Training Course to all participants. Dr. Joseph de Graft-Johnson then thanked the hosts, guests, participants and facilitators and called the meeting to a close.

8. Course Evaluation

Of the 121 participants who attended the training, 102 completed the course evaluation. The vast majority stated they were very much committed to roll out HBB training in their respective countries, and stated that they planned to do so by: advocating for HBB; ensuring its inclusion in pre-service and in-service curricula; bringing together stakeholders; participating in HBB training rollout monitoring and evaluation; and supervising and mentoring other trainers.

98% of respondents plan to serve as HBB master trainers in their countries.

Out of 96 respondents, 62 participants that said they considered themselves *very well-prepared* to be HBB master trainers following the Addis regional training, 29 *well-prepared*, four *OK* and one *not well-prepared*.

Results from participant evaluations of training sessions from HBB Session 1 are as shown in Table 4:

Table 4. Participant Evaluations of Specific Training Sessions

HBB Session	Participant Rating				
	Great	Very Good	Good	Fair	Poor
Preparation for a Birth	51%	30%	18%	1%	0%
Eighty-one percent (81%) of participants rated this session Very Good or Great. Participants recommended that: the local context should be emphasized; preparation of the mother should be discussed; use of drugs for AMTSL, PMTCT and safety of health workers should be addressed; and special considerations, such as twins, should be included.					
Routine Care	59%	25%	16%	0%	0%
Eighty-four (84%) of participants rated this session Very Good or Great. Participants commented that: gloves, scissors and cord clamps should be added to the training package; the curriculum should mention or discuss TTC eye ointment, vitamin K and vaccination; and facilitators should emphasize skin-to-skin contact for baby and mother.					
Golden Minute—Airway and Stimulation	64%	27%	7%	2%	0%
Ninety-one percent (91%) of participants rated this session Very Good or Great. Participants recommended that future sessions: emphasize the importance of assessing for suction; address postpartum care for the mother; and include the importance of talking to the mother about actions being taken to resuscitate the baby.					
Golden Minute—Ventilation	67%	27%	6%	0%	0%
Ninety-four percent (94%) of participants rated this session Very Good or Great. Some participants requested more time for equipment assembly and practice.					
Mastering Bag & Mask Ventilation	69%	27%	4%	2%	0%
Ninety-six percent (96%) of participants rated this session Very Good or Great. Multiple participants requested more time to practice with the bag and mask; one suggested a video demonstration would be helpful; and one noted that it is sometimes difficult to achieve a complete seal on the NeoNatalie mannequin without crushing its face. This latter point has also been noted by Laerdal Medical AS and efforts are underway to design a better resuscitator.					

HBB Session	Participant Rating				
	Great	Very Good	Good	Fair	Poor
Continued Ventilation—Normal HR	40%	43%	13%	3%	0%
Continued Ventilation—Slow HR	42%	43%	13%	2%	0%
Eighty-three percent (83%) and 85% of participants rated the Normal and Slow Heart Rate sessions, respectively, as Very Good or Great. Multiple participants commented that insufficient time was given for this session—both for demonstration and practice—and that they needed more clear, step-by-step guidance and instruction in order to train low-level providers.					

9. Next Steps

A. Participants

- Build consensus with country stakeholders for the way forward; meet with MNH staff in the MOH and reflect the discussion back to them; establish HBB working group led by the MOH
- Review the Draft Implementation Guide and provide feedback to its authors
- At country level, emphasize to MOH and other stakeholders the importance of HBB integration with existing programs and activities
- Share with and advocate for the HBB training to other stakeholders in country (UNICEF, UNFPA, etc.)
- Build capacity/train others to strengthen HBB service implementation at the country level
- Translate HBB materials as applicable (e.g., Portuguese for Mozambique)

Facilitators encouraged participants to:

- Visit the HBB Web site (www.helpingbabiesbreathe.org) for links to HBB materials and information on ordering equipment and learning materials
- Join the HBB Community of Practice site at www.k4health.org/toolkits/hbb-community; this will help participants engage in discussions with colleagues from across the globe
- Remain in contact with one another

A list of all participants trained during the Addis HBB Regional Training is presented in Appendix F and will be shared—along with contact information—with other participants.

B. HBB GDA Members

HBB GDA members stated their commitment to the following steps to help participants advance HBB in their countries:

- Use the HBB GDA implementation database to link the Addis participants to the other trained HBB implementers in their respective countries by May 2011
- Follow-up with each country team on what HBB activities have occurred since the Addis training by June 2011

APPENDIX A. LIST OF PARTICIPANTS

ANGOLA

Ondina da Cruz Gonçalves Cardoso, Agostinho Neto University
Paulo Adão Campos, Agostinho Neto University
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Jhony Juarez, Jhpiego
Isabel Vashti Simbeye, UNICEF
Maria Costa, WHO Angola

BENIN

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BOTSWANA

Keoagestse Kgwabi, Nurses Council

BRAZIL

Veronica Reis, Jhpiego

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Mongi Pyande, WHO/AFRO

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Nalini Singhal, Alberta Children's Hospital
Diane Sawchuck, University of British Columbia
Peter von Dadelszen, University of British Columbia

EQUATORIAL GUINEA

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ETHIOPIA

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Joao Soares, AMREF
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Hannah Gibson, Jhpiego
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Naomi Jayaratne, Jhpiego
Sheena Currie, Jhpiego
Solomon Wolde, Jhpiego
Tegbar Yigzaw, Jhpiego
Yassir Abduljewad, Jhpiego
Yodit Kidane Mariam, Jhpiego
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Wuleta Betemariam, L10K
Abebe Gebremariam, MANHEP
Mohammed Reshid, MOH
Nighist Tesfaye, MOH
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Appendix A: List of Participants

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Appendix A: List of Participants

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Kate Epting, MCHIP
Koki Agarwal, MCHIP
Lindsay Morgan, MCHIP
Rachel Taylor, MCHIP
Stella Abwao, MCHIP/Save the Children
Steve Hodgins, MCHIP
Winifride Mwebesa, MCHIP
Yaikah Jeng Joof, MCHIP
Grace A.Adeya, MSH
Alice Levisay, PATH/Oxytocin Initiative
Elizabeth Abu-Haydar, PATH
Emily Fritch, PATH/Oxytocin Initiative

USA (cont.)

Sarah Dillmuth, PATH/Oxytocin Initiative
Steve Brooke, PATH
Susheela Engelbrecht, PATH/Oxytocin Initiative
Sylvia Boulos, PATH/Oxytocin Initiative
Cathy Solter, Pathfinder International
Ellen Israel, Pathfinder International
Ndola Prata, University of California, Berkeley
Luc Destanne de Bernis, UNFPA
Deb Armbruster, USAID
Douglas Laube, USAID
Karen Fogg, USAID
Lily Kak, USAID
Mary Ellen Stanton, USAID
Nahed Matta, USAID
Troy A. Jacobs, USAID/GH/HIDN/MCH
Yvonne Okoh Onyike, VCU/Fairfax Family Practice
Amy Grossman, VSI
Martine Holston, VSI
Richard Lowe, VSI
Shannon Bledsoe, VSI

ZAMBIA

Theresa Chansa Sikateyo, General Nursing Council of Zambia
Michelle Wallon, Jhpiego
Peggy Chibuye, Midwifery Association of Zambia
Chipepo Iombe Chibesakunda, Ministry of Health, Kafue District
Lois Munthali, Ministry of Health
Reuben Mbewe, Ministry of Health
Abdul Razak Badru, Mobilising Access to Maternal Health Services in Zambia (MAMaZ) Programme
Joyce Nachangwa Musenga, Ndola School of Nursing, Midwifery & Theatre
Beatrice M. Zulu, University Teaching Hospital
Chipoya Chipoya, University Teaching Hospital
Jully Chilambwe, Society for Family Health
Rabecca Kalwani, VSI
Bernard K Kasawa, ZISSP
Christopher C B Ng'andwe, ZISSP

ZIMBABWE

Elizabeth Dangaiso, MCHIP
Engeline Mawere, MCHIP
Hillary Chiguvare, MCHIP
Rose A. Kambarami, MCHIP
Margaret Nyandoro, Ministry of Health and Child Welfare
Regina Nsipa Kayemba, Parirenyatwa Hospital School of Nursing
Partson Zvandasara, University of Zimbabwe
Shelly E. Chitsungo, UNICEF
Tarra McNally, VSI

APPENDIX B: MEETING AGENDA

Interventions for Impact in EONC

Africa Regional Meeting

Detailed Agenda

Day One: 21 February 2011 (Monday)

8:30	OPENING SESSION	
	Goals and overview of the meeting	
	Welcome and remarks from dignitaries, funders and organizers	
	Address on Maternal and Newborn Health in Africa	<i>Pyande Mongi (WHO/AFRO)</i>
9:45	NEW EVIDENCE FOR PREVENTION AND TREATMENT OF POSTPARTUM HEMORRHAGE	MODERATOR: Koki Agarwal (MCHIP)
	New guidance on PPH prevention and management	<i>Matthews Mathai (WHO/Geneva)</i>
	Updates on use of misoprostol for prevention and management of PPH	<i>Beverly Winikoff (Gynuity)</i>
	Updates on new technologies for the management of PPH	<i>Sylvia Deganus (Ghana Health Service)</i>
	Landscape study on use of uterotonic substances at or around the time of birth in Ghana	<i>Patience Cofie (Oxytocin Initiative)</i>
	Discussion	
11:00	TEA/COFFEE	
11:30	OVERCOMING PROGRAMMATIC BARRIERS TO IMPLEMENTING PPH PREVENTION AT THE FACILITY LEVEL	MODERATOR: Alice Levisay (Oxytocin Initiative)
	Overcoming procedural and policy barriers	<i>Aboudou Mama Sèni (MOH/Benin)</i>
	Overcoming provider barriers to introduction and sustainability of AMTSL at facilities	<i>Susheela Engelbrecht (PATH)</i>
	Overcoming barriers to implementation: The role of professional associations	<i>Sabaratnam Arulkumaran (FIGO)</i>
	Discussion	
12:30	LUNCH	
13:30	EXPERIENCES OF IMPLEMENTATION OF PPH PREVENTION AND TREATMENT AT COMMUNITY LEVEL	MODERATOR: Becky Ferguson (Bill & Melinda Gates Foundation)
	PPH prevention and treatment in Africa using misoprostol at community level	<i>Ndola Prata (VSI)</i>
	When active management is not possible	<i>Karen Guillard (International Confederation of Midwives)</i>
	PPH prevention through platform of antenatal care	<i>Albert Kitumbo (Ifakara, Tanzania)</i>
	Clinical and Community Action to Address PPH	<i>Farouk Jega (Pathfinder)</i>
	Discussion	

14:45	GROUP EXERCISE: INTERVENTIONS FOR PREVENTION AND MANAGEMENT OF PPH	
15:45	TEA/COFFEE	
16:15	QUALITY OF CARE ESSENTIAL OBSTETRIC CARE	MODERATOR: Yirgu G/Hiwot (ESOG)
	Results of MCHIP quality-of-care surveys from six countries	<i>Linda Bartlett (Johns Hopkins University /IIP)</i>
	EmOC assessments	<i>Koye Oyerinde (AMDD)</i>
	Scale-up schematic	<i>Jeffrey Smith (MCHIP)</i>
	Discussion	

Day Two: 22 February 2011 (Tuesday)

8:30	OPENING OF THE DAY	
	Announcements and agenda	<i>Jeffrey Smith (MCHIP)</i>
	Burden of disease of PE/E in Ethiopia	<i>Mengistu Hailemariam (MOH Ethiopia)</i>
9:00	EVIDENCE FOR PREVENTION AND DETECTION OF PRE-ECLAMPSIA	MODERATOR: Nahed Matta (USAID)
	Calcium (or aspirin) for prevention of PE/E	<i>Justus Hofmeyr (Frere Maternity Hospital/South Africa)</i>
	Modeling for impact of calcium supplementation	<i>Steve Hodgins (MCHIP)</i>
	Detection of PE/E during ANC – data from QoC studies	<i>Jim Ricca (MCHIP/Mozambique)</i>
	Screening and early detection of PE/E at the community level	<i>Harshad Sanghvi (Jhpiego)</i>
	Discussion	
10:30	TEA/COFFEE	
11:00	EVIDENCE FOR MANAGEMENT OF SEVERE PRE-ECLAMPSIA AND ECLAMPSIA	MODERATOR: Deb Armbruster (USAID)
	Choice of anticonvulsant for PE/E	<i>Matthews Mathai (WHO/Geneva)</i>
	Choice of antihypertensive for PE/E	<i>Peter von Dadelszen (Univ BC)</i>
	Induction of labor: new WHO guidelines	<i>Femi Oladapo (WHO/Geneva)</i>
	PE/E management strategies at different levels of the health care system	<i>Pius Okong (Nsambya Hospital/Uganda)</i>
	Discussion	
12:30	LUNCH	
13:30	GROUP EXERCISE: INTERVENTIONS FOR PREVENTION AND MANAGEMENT OF PE/E	
15:00	TEA/COFFEE	
15:30	SKILL AND DISCUSSION SESSIONS: Each lasts 25 minutes with discussion then repeated two times (three times total)	

Skill and Discussion Sessions: 15:30–17:00

Title	Details	Facilitator (s)
Screening for and detecting PE/E	Review of specifics of BP measurement and proteinuria testing. Demonstration of the use of new and innovative screening tools at the community level	<i>Harshad Sanghvi, Kusum Thapa and Abigail Kyei</i>
Induction of labor	Detailed review of WHO induction of labor guidelines with use of a clinical scenario to demonstrate timing of induction of labor	<i>Mathews Mathai and Sheena Currie</i>
Implementing MgSO₄ protocols	How to implement MgSO ₄ protocols when faced with issues of different concentration, different routes of administration and different dosing. Use of job aids for MgSO ₄ administration	<i>Blami Dao and Catherine Carr</i>
Teaching PE/E decision making (tool intro) and LRP	Going through the PE/E Decision Making Tool and reviewing content of the PE/E Learning Resource Package	<i>Peter Johnson and Gaudiosa Tibaijuka</i>
Introduction of the uterotonic decision-making tool	Going through the uterotonic selection tool and reviewing critical issues when choosing a uterotonic drug for each point of service and by each type of birth attendant	<i>Susheela Engelbrecht and Steve Brooke</i>
Preeclampsia/eclampsia e-learning tool	Demonstration of “The Evidence-Based Management of Pre-eclampsia and Eclampsia: an Interactive E-learning Course for Healthcare Professionals,” developed by the Maternal Health Task Force and University of Oxford	<i>Hannah Knight</i>
Teaching maternity care using <i>MamaNatalie</i>	Demonstration of the use of the <i>MamaNatalie</i> model for teaching childbirth and the management of PPH	<i>Tore Laerdal, Ingrid Laerdal, Hannah Gibson and Angie Fujioka</i>
Balloon tamponade and other techniques	Demonstration of clinical interventions/techniques for management of PPH using anatomic models	<i>Elizabeth Abu-Haydar and Sylvia Deganus</i>

Day Three: 23 February 2011 (Wednesday)

8:30	OPENING OF THE DAY	MODERATOR: Pyande Mongi (WHO/AFRO)
	Announcements and agenda	Jeffrey Smith (MCHIP)
	Routine measurement of quality of care	Barbara Rawlins (MCHIP)
	Global benchmark indicators for maternal and perinatal health	Steve Hodgins (MCHIP)
	Interventions frameworks for PPH and PE/E – taking the message back home	Jeffrey Smith (MCHIP)
9:15	IMPLEMENTATION OF PE/E PROGRAMS	MODERATOR: Luc de Bernis (UNFPA)
	Early experience of expansion of use of MgSO ₄ in Nigeria	Jamilu Tukur (Aminu Kano Teaching Hospital, Kano, Nigeria)
	Pharmaceuticals and logistic mechanisms	Grace Adeye (SPS)
	Changing policy – Rwanda's change in guidelines	Stephen Rulisa (Rwanda Research Council)
	MCHIP TZ – Midwives giving MgSO ₄	Gaudiosa Tibaijuka (MAISHA/Tanzania)
	Looking at pre-eclampsia through a health systems lens	Lindsay Morgan (MCHIP/Broad Branch Associates)
	Discussion	
10:45	TEA/COFFEE	
11:15	IMPROVING NEONATAL RESUSCITATION – HELPING BABIES BREATHE (HBB)	
	Neonatal resuscitation in the context of ENC	Pyande Mongi (WHO/AFRO)
	Prevention of newborn asphyxia through improved labor care	Jeffrey Smith (MCHIP)
	Quality of care survey results for newborn care	Joseph de Graft-Johnson (MCHIP)
	Introduction of HBB training materials	Tore Laerdal (Laerdal Foundation)
	Presentation of HBB field-testing results	Nalini Singhal (American Association of Pediatrics)
	Demonstration of HBB using training simulators	Nalini Singhal and HBB Trainers
13:00	LUNCH	
14:00	CONSOLIDATION AND EXPANSION: Participants from same country will review posters and consider where programs should be moving, based on the new information learned	Facilitators and country teams at posters
14:45	NEXT STEPS: Reflections from three representatives about moving forward and implementing/ expanding programs	MODERATORS: Koki Agarwal (MCHIP), Alice Levisay (OI) and Harshad Sanghvi (Jhpiego)
15:30	SUMMARY AND CLOSING	
16:00	TEA/COFFEE	

APPENDIX C: PRESENTERS' INFORMATION

DAY 1: PANEL 1—NEW EVIDENCE FOR PREVENTION AND TREATMENT OF POSTPARTUM HEMORRHAGE

Moderator: Koki Agarwal, MCHIP

New guidance on PPH prevention and management

Matthews Mathai—WHO/Geneva

Matthews Mathai was Professor of Obstetrics and Gynaecology at Christian Medical College, Vellore, India until 2005. He has worked in many countries in Asia and the Pacific, training health workers in reproductive health, particularly in maternal and perinatal care. He established and directed the Regional Training and Research Centre in Reproductive Health at the Fiji School of Medicine, Suva, Fiji (1996–97). Currently he works with the World Health Organization (WHO) in Geneva, where he contributes to the development and update of WHO's Integrated Management of Pregnancy and Childbirth (IMPAC) guidelines and tools.

Updates on use of misoprostol for prevention and management of PPH

Beverly Winikoff—Gynuity

Beverly Winikoff, M.D., M.P.H., is President of Gynuity Health Projects and Professor of Clinical Population and Family Health at the Mailman School of Public Health, Columbia University. Before starting Gynuity in 2003, Dr. Winikoff was Program Director for Reproductive Health and a Senior Medical Associate at the Population Council in New York. There, she developed the Council's *Ebert Program on Critical Issues in Reproductive Health*, including work on Safe Motherhood, STDs/AIDS, unsafe abortion, provision of safe abortion care, and postpartum care for mothers and babies. Prior to joining the Council in 1978, she was Assistant Director for Health Sciences, The Rockefeller Foundation. Her work has focused on issues of reproductive choice, contraception, abortion and women's health. Dr. Winikoff graduated from Harvard University *magna cum laude* and earned her M.D. degree from New York University and her M.P.H. degree from the Harvard School of Public Health. She is particularly interested in issues surrounding the abuse, misuse and non-use of medical technology in terms of the impact these phenomena have on women's health and autonomy.

Updates on new technologies for the management of PPH

Sylvia Deganus—Ghana Health Services

Dr. Sylvia Deganus is an Obstetrician/Gynecologist and Public Health Specialist, while also serving as the Head of Department of the Ob/Gyn Unit at Tema General Hospital, Tema, Ghana. Dr. Deganus is also a master trainer in MNH and a keen researcher and advocate for quality MNH care.

Landscape study on use of uterotonic substances at or around the time of birth in Ghana

Patience Cofie—Oxytocin Initiative, PATH

Patience Cofie is the research coordinator for PATH's Oxytocin Initiative Project in Ghana. She has over 15 years of experience in health systems and operational research. She is also a gender and health advocate. Her interest has been in the area of "Moving research into action: communicating research to policy makers."

DAY 1: PANEL 2—OVERCOMING PROGRAMMATIC BARRIERS TO IMPLEMENTING PPH PREVENTION AT THE FACILITY LEVEL

Moderator: Alice Levisay, Oxytocin Initiative, PATH

Overcoming procedural and policy barriers

Aboudou Mama Sèni—MOH/Benin

Aboudou Mama Sèni is a gynecologist/obstetrician in service at the Hôpital de la Mère et de l'Enfant-Lagune (HOMEL) since April 6, 1987 (24 years), and is currently the Chief Medical Officer.

Overcoming provider barriers to introduction and sustainability of AMTSL at facilities

Susheela Engelbrecht—PATH

Susheela Engelbrecht is a nurse-midwife with a Master of Public Health. She has spent more than 15 years working in peripheral facilities in West Africa, and she has more than 25 years' experience in international health, mostly in Sub-Saharan Africa.

Overcoming barriers to implementation: The role of professional associations

Sabaratham Arulkumaran—FIGO

Sabaratham Arulkumaran currently serves as Professor & Head of Obstetrics & Gynaecology, St. George's University of London, Past President Royal College of Obstetricians & Gynaecologists, UK; President Elect FIGO. He has indexed/peer-reviewed 250 publications and has authored/edited 26 books. His main interest is high risk pregnancy and intrapartum care, especially PPH. He has also been honored by Her Majesty the Queen of the UK for services to medicine and health care. Dr. Arulkumaran has 38 years of experience working as a doctor and 28 years of experience as a clinical academic in Ob/Gyn.

DAY 1: PANEL 3—EXPERIENCES OF IMPLEMENTATION OF PPH PREVENTION AND TREATMENT AT COMMUNITY LEVEL

Moderator: Becky Ferguson, The Bill & Melinda Gates Foundation

PPH prevention and treatment in Africa using misoprostol at community level

Ndola Prata—VSI

As an Angolan physician and medical demographer, Dr. Prata has worked throughout Africa and Asia. In her role at VSI (Director, Medical and Programs), she has designed protocols and directed technical assistance and training for the organization's clinical demonstration studies in several countries. She is also an Associate Professor of MCH at the University of California, Berkeley and serves as the Scientific Director for the Bixby Center for Population, Health and Sustainability. Dr. Prata has published extensively in areas such as of family planning, financing/payment for RH programs, the private sector's role in health care in developing countries, priorities for maternal health, and the use of misoprostol for PPH. After she received a doctor of medicine degree in Angola, she spent the next 10 years practicing medicine and serving as Head of the Social Statistics Department at the National Institute of Statistics in the country. She then received an MS in medical demography from the London School of Hygiene and Tropical Medicine.

When active management is not possible

Karen Guillard—International Confederation of Midwives (ICM)

Karen Guillard is currently the Chief Executive Officer of the New Zealand College of Midwives with 40 years' experience in a wide variety of clinical practice as a nurse and midwife, which includes teaching and research, governance and management positions. She is an Advisor on midwifery practice, regulation and education both to Government nationally and

internationally. She is a longstanding Asia Pacific representative on the International Confederation of Midwives (ICM) Board and has published numerous papers, articles and book chapters and presented at many international conferences as a keynote speaker on midwifery and women's health.

PPH prevention through platform of antenatal care

Albert Kitumbo—Ifakara/Tanzania

Clinical and community action to address PPH

Farouk Jega—Pathfinder

Dr. Farouk Mohammed Jega is the Program Manager of the MacArthur-funded “Clinical and Community Actions to Address Postpartum Hemorrhage Project” with Pathfinder’s Nigeria Country Office. With a background in Obstetrics and Gynecology, Farouk also holds a Master’s degree in Community Health from the Liverpool School of Tropical Medicine. Before joining Pathfinder, he has worked variously as a consultant for the UNFPA, Brooks Merseyside and the Gujarat State Ministry of Health and Family Welfare.

DAY 1: PANEL 4—QUALITY OF CARE: ESSENTIAL OBSTETRIC CARE

Moderator: Yirgu G/Hiwot, ESOG

Results of MCHIP quality-of-care surveys from six countries

Linda Bartlett—Johns Hopkins University/IPPEmOC assessments

Emergency Obstetric and Newborn Care Assessments in Africa: Focus on Postpartum Hemorrhage and Pre-Eclampsia/Eclampsia

Koye Oyerinde—AMDD

Dr. Koyejo Oyerinde is an Assistant Clinical Professor for the Averting Maternal Death and Disability Program (AMDD) at the Department of Population and Family Health, Columbia University. He leads AMDD’s work on Emergency Obstetric and Newborn Care Assessments worldwide. Dr. Oyerinde has worked on several surveys focusing on maternal and newborn health in Lesotho, Namibia, Somalia and Sierra Leone. He received medical training in Nigeria and underwent graduate studies in general public health and epidemiology in Nigeria and South Africa. He is a fellow of the American Academy of Pediatrics and a member of their section on international health

Tracking scale-up of maternal and newborn health interventions

Jeffrey Smith—MCHIP

Jeffery M. Smith, MD, MPH, is an Obstetrician-Gynecologist and public health practitioner with 20 years of clinical and public health experience in developing countries. He is the Maternal Health Team Leader at MCHIP and is based in Washington, D.C. He recently spent 10 years in Asia for Jhpiego, in Nepal, Afghanistan and Thailand.

DAY 2: PANEL 5—EVIDENCE FOR PREVENTION AND DETECTION OF PRE-ECLAMPSIA**Moderator: Nahed Matta, USAID****Calcium (or aspirin) for prevention of PE/E*****Justus Hofmeyr—Frere Maternity Hospital/South Africa***

Justus Hofmeyr is an obstetrician working in the Eastern Cape, South Africa. His research is focussed on randomized trials and systematic reviews addressing major causes of maternal death in low-income countries.

Modeling for impact of calcium supplementation***Steve Hodgins—MCHIP***

Steve Hodgins is the Global Health Team Leader of USAID's MCHIP project. He comes to this position after having spent much of the previous 10 years in the field, based first in Zambia, where he worked in the USAID mission, and then more recently in Nepal, where he headed USAID's main MNCH/FP bilateral. He is a physician and epidemiologist by training, and has broad technical interests. Although he is fundamentally a program person, he has had continuing involvement in applied research throughout his career.

Detection of PE/E during ANC—data from QoC studies***Jim Ricca—MCHIP/Mozambique***

Jim Ricca is currently the Chief of Party for the MCHIP program in Mozambique. He has previously worked with MCHIP/Washington and before that with one of its predecessor projects—the Child Survival Technical Support Plus Project. He has worked on Maternal and Child health in clinical and community settings for the last 17 years and is a family doctor and public health specialist by training.

Screening and early detection of PE/E at the community level***Harshad Sanghvi—Jhpiego***

Dr. Harshad Sanghvi has made many invaluable contributions to the field of obstetrics, gynecology and clinical epidemiology. He has extensive experience assisting low-resource countries to adopt evidence-based guidelines, design training systems and develop health trainers and leaders. He received his medical education in Kenya and his graduate, residency and postdoctoral training in the United Kingdom and United States. As Jhpiego's Vice President and Medical Director, Dr. Sanghvi is responsible for leading development of technical and clinical approaches by designing low-cost solutions to strengthen health care for women and their families. For the last 15 years, he has led the global effort in expanding emergency obstetric care and moving forward innovations for preventing postpartum hemorrhage, cervical cancer and pre-eclampsia/eclampsia.

DAY 2: PANEL 6—EVIDENCE FOR MANAGEMENT OF SEVERE PRE-ECLAMPSIA AND ECLAMPSIA**Moderator: Deb Armbruster, USAID****Choice of anticonvulsant for PE/E*****Matthews Mathai—WHO/Geneva***

Matthews Mathai was Professor of Obstetrics and Gynaecology at the Christian Medical College, Vellore, India until 2005. He has worked in many countries in Asia and the Pacific, training health workers in reproductive health, particularly in maternal and perinatal care. He established and directed the Regional Training and Research Centre in Reproductive Health at the Fiji School of Medicine, Suva, Fiji (1996-97). Currently he works with the World Health

Organization in Geneva, where he contributes to the development and update of WHO's Integrated Management of Pregnancy and Childbirth (IMPAC) guidelines and tools.

Choice of antihypertensive for PE/E

Peter von Dadelszen—University of British Columbia

Peter von Dadelszen is an Associate Professor of Obstetrics and Gynecology (Maternal-Fetal Medicine) at the University of British Columbia and consultant in Maternal-Fetal Medicine, Children's and Women's Health Centre of BC. His appointment at UBC is that of a clinician-scientist, with 80% protected time for research; his research interests are focused on the area of pre-eclampsia and pregnancy hypertension, from basic science to clinical epidemiology and health services research. Peter is the principal investigator of the recently announced Bill & Melinda Gates Foundation PRE-EMPT (PRE-eclampsia—Eclampsia Monitoring, Prevention & Treatment) project.

Induction of labor: new WHO guidelines

Femi Oladapo—WHO/Geneva

Dr. Olufemi T. Oladapo is an obstetrician-gynecologist working as a Senior Lecturer/Consultant at the Maternal and Fetal Health Research Unit, Department of Obstetrics & Gynecology, Olabisi Onabanjo University, Sagamu, Nigeria. He is the Clinical Research & Training Coordinator of the Center for Research in Reproductive Health (a WHO collaborating center for research in human reproduction) in Sagamu, Nigeria. His main research interest is in evidence-based obstetric care and strategies to reduce severe acute maternal morbidity and maternal mortality in underserved populations. Dr. Oladapo is a reviewer for the Pregnancy and Childbirth Group of the Cochrane Collaboration and a member of the Guideline Development Group working on the 'WHO Recommendations for the Management of Pre-eclampsia and Eclampsia'.

PE/E management strategies at different levels of the health care system

Pius Okong—Nsambya Hospital/Uganda

DAY 3: PANEL 7—IMPLEMENTATION OF PRE-ECLAMPSIA/ECLAMPSIA PROGRAMS

Moderator: Pyande Mongi, WHO/AFRO

Routine measurement of quality of care

Barbara Rawlins—MCHIP

Global benchmark indicators for maternal and perinatal health

Steve Hodgins—MCHIP

Steve Hodgins is the Global Health Team Leader for USAID's MCHIP project. He comes to this position after having spent much of the previous 10 years in the field, based first in Zambia, where he worked in the USAID mission, and then more recently in Nepal, where he headed USAID's main MNCH/FP bilateral. He is a physician and epidemiologist by training, and has broad technical interests. Although he is fundamentally a program person, he has had continuing involvement in applied research throughout his career.

Interventions frameworks for PPH and PE/E—taking the message back home

Jeffery Smith—MCHIP

Jeffery M. Smith, MD, MPH, is an Obstetrician-Gynecologist and public health practitioner with 20 years of clinical and public health experience in developing countries. He is the

Maternal Health Team Leader at MCHIP, based in Washington, DC. He recently spent 10 years in Asia for Jhpiego, in Nepal, Afghanistan and Thailand.

DAY 3: PANEL 8—MEASUREMENTS AND INDICATORS TO ASSIST PPH AND PE/E PROGRAMMING

Moderator: Luc de Bernis, UNFPA

Early experience of expansion of use of MgSO₄ in Nigeria

Jamilu Tukur—Aminu Kano Teaching Hospital, Kano, Nigeria

Dr. Jamilu Tukur is a consultant obstetrician and gynecologist working at the Aminu Kano Teaching Hospital in Kano, Northern Nigeria, and works as the head of the department of ob/gyn. He is also a senior lecturer with the Bayero University, Kano, and a consultant to Population Council, Nigeria.

Pharmaceuticals and logistic mechanisms

Grace Adeya—SPS

Dr. Grace Adeya is the Senior Technical Manager for Maternal and Child Health with the Strengthening Pharmaceutical Systems Program of the Center for Pharmaceutical Management at Management Sciences for Health (MSH). Dr. Adeya has expertise in pharmaceutical management and care including supply chain management/commodity security, capacity building, selection and formulary management, pharmacovigilance and medicine safety, rational drug use, drug information management and pharmacoeconomics and health economics. Before joining MSH, Dr. Adeya worked as a physician in private and public sector hospitals in Kenya. In addition to her medical degree, Dr. Adeya holds a Master's degree in Public Health with a concentration in Epidemiology and Biostatistics, and a Master's degree in Business Administration.

Changing policy—Rwanda's change in guidelines

Stephen Rulisa—Rwanda Research Council

Dr. Stephen Rulisa is an Obstetrician-Gynecologist & lecturer at the school of medicine, National University of Rwanda. He is also the Department Head of clinical research at the University Teaching Hospital of Kigali as well as the President of the Rwanda Medical Association.

MCHIP TZ—Midwives giving MgSo₄

Gaudiosa Tibaijuka—MAISHA/Tanzania

Gaudiosa Mugyabuso Tibaijuka is a certified Nurse Midwife with a Master's Degree in Education and a Certification in Population, Development, Reproductive and Child Health. Currently Senior Technical Manager with Tanzania Jhpiego office, key in the implementation of MNH program on focused ANC, BEmONC, Supervision and SBM-R interventions national wide.

Looking at pre-eclampsia through a health systems lens

Lindsay Morgan—MCHIP/Broad Branch Associates

Lindsay Morgan is a senior health analyst with Broad Branch Associates and previously served with the World Bank in Tanzania, where she analyzed results-based financing for health schemes across the continent. Before that, Lindsay was a policy analyst with the Center for Global Development, a Washington DC-based think tank.

APPENDIX D: RESULTS OF COUNTRY PROGRAM POSTER REVIEWS⁶

ANGOLA

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Make oxytocin and MgSO₄ available to all health facilities providing delivery services.
 - a. Review the drug and supply chain management
 - b. Link with all FPA's RH/contraceptive commodity security strategy
 2. Strengthen pre-service training of doctors, nurses, midwives to ensure that the curriculum includes prevention and management of PPH, PE/E and essential newborn care
 3. Review the existing in-service training curriculum to ensure strengthening of prevention and management of PPH, PE/E and essential newborn care.
 4. Review the successes/lessons learned/ best practices of community health workers in Cacucou municipal of Luanda province and plan to expand to other municipals.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Organize meetings with the Associations of obstetricians/gynecologists, pediatricians and midwives to share information from the Addis meeting.
 2. Translate and disseminate all documents from the Addis meeting
 3. To organize a meeting with international partners to mobilize support.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Strengthening and increasing the human resource for health, particularly for maternal and newborn.
 2. Strengthening and augmenting capacity at the central level of the Ministry of Health.

⁶ Country posters can be accessed through the MCHIP Web site (www.mchip.net).

ETHIOPIA

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. To scale up community use of misoprostol for PPH prevention and management.
 2. To strengthen AMTSL at facility level.
 3. Making available MgSO₄ to health centers so that midwives could be using to treat patients with PE/E.
 4. Community awareness for danger signs and emergency planning including transport.
 5. Quality of care initiatives to improve appropriate management of severe PE/E.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. To communicate with health professionals, ESOG, midwifery associations on current PPH prevention and management.
 2. The participant will go back to their organization and brief their respective staff at MOH, RHB and partners.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Low level of utilization of health delivery services.
 2. Inadequate supplies and trained personnel at community and facility level.
 3. Distribution and utilization of MgSO₄ in the country/timely distribution to health institutions.

GHANA

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Surveillance of quality of uterotonics.
 2. Increase MgSO₄ availability and correct use at all levels.
 3. Develop sentinel sites for maternal health focusing on QoC.
 4. Community sensitization on recognition and action for PPH and PE/E.
 5. Improve technical and supportive supervision.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Share information at Family Health Division Biannual Conference.
 2. Encourage content to be included in medical director meetings, midwife meetings, etc.
 3. PPH/Family Health Division (Gloria, Frank, and Sylvia) and MCHIP to plan dissemination roll out.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Money: national budget already fixed for this year.
 2. Must have buy in from decision makers at all levels.
 3. Competing priorities on the ground.
 4. Weak data to inform immediate program implementation.

KENYA

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Scale up implementation of HII5 through the annual operational planning and community strategy.
 2. Capacity building for AMTSL, partograph and use of MgSO₄ at all levels of the health system.
 3. Strengthening equipment, commodities and supply management for PPH and PE/E.
 4. Adapt and disseminate IEC materials and job aids, etc. for PPH and PE/E.
 5. Strengthen M&E/ support supervision for PPH and PE/E.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Brief the heads of department and divisions in both Ministries of Health.
 2. Prepare 1 page summary and convene a special TWY for MWCH to disseminate outcomes of this meeting.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Ensuring availability of drugs and commodities for PPH, PE/E at point of use.
 2. Limited resources for up scaling interventions.
 3. Re-deployment of trained staff to other departments.

LIBERIA

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. CBD-PPH prevention.
 2. Supervision of facility proteinuria.
 3. Need filter paper reagent for protein.
 4. Need to get MgSO₄ down to facility level with protocols.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Training misoprostol at community/facility, misoprostol on EDL.
 2. Supervision and M&E for all especially facility.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Logistics for increased supervision.
 2. HR for increased supervision.

MADAGASCAR

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. To ensure there is facility level quality improvement in PE/E and PPH.
 2. Advocacy and early program implementation for use of misoprostol on demonstration basis.
 3. Work to reduce financial barriers to access intrapartum care.
 4. Strengthening the logistics systems for these commodities.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Disseminate PPH and PE/E tools at next MNH working group.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Getting proper government approval and buy in from stakeholders to use misoprostol.

MALAWI

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Put use/pilot of misoprostol as an agenda item for subcommittee meeting on March 22nd.
 2. Logistical officer at RHU to sound an alarm on the dwindling stock of oxytocin (<3 months stock)
 3. Disseminate the reliability and safety of MgSO₄ to safe motherhood subcommittee, DHO, training institutions, etc. to increase usage among SBAs.
 4. Review forthcoming WHO guidelines for PE/E and evaluate calcium supplementation in pregnancy in Malawi.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Brief the Safe Motherhood subcommittee meeting on the deliberation of the impact in essential obstetric and newborn care meeting.
 2. Develop a fact sheet on use of MgSO₄ at health center level (safety guidance).
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Funding for misoprostol pilot.
 2. Supply chain management.

MALI

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Pilot and advocate for misoprostol for routine AMTSL
 2. Ensure the regularly availability of uterotonics (Uniject) and MgSO₄ including ensuring its quality.
 3. Reinforce and advocate for the use of partograph.
 4. Reinforce EMONC program.
 5. Routine clinical drills to maintain provider's skills to manage PE/E.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Dissemination during a quarterly task force meeting.
 2. Dissemination during the National Congress of Midwives (May 7, 8 2011).
 3. Advocate for a West Africa regional meeting in French similar to this one.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Drugs (Uniject and MgSO₄) availability.

MOZAMBIQUE

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. There already is an integrated training package for MNCH being developed need to finish this and put emphasis on NTSR, AMTSL, MgSO₄.
 2. Identify best job aids for AMTSL, MgSO₄ use and reproduce and distribute.
 3. Distribution of misoprostol through ANC and TBAs
 4. Take Model Maternities standard for NTSR, MgSO₄, AMTSL and disseminate to all health facilities.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Meeting with key Ministry personnel
 2. Disseminate through APARMO, AMOG
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Logistics system for MgSO₄, oxytocin, misoprostol.
 2. Ensuring supervision and follow up after training.

NIGERIA

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Scale up misoprostol and estimating improving blood loss estimation at community and facility level.
 2. Ensure availability of magnesium sulfate, oxytocin and misoprostol at all facilities.
 3. Improve detection of proteinuria, blood pressure and anemia at facility level.
 4. Scale up Helping Babies Breathe.
 5. Strengthen the use of birth preparedness plan at community and facility level.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. National level advocacy meeting upon return.
 2. Insert new learning into pre-service and in-service curriculum.
 3. Hold a state level meeting to ensure procurement of misoprostol, oxytocin and magnesium sulfate as part of Essential Medicine List.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Sustainability/funding.
 2. Supply chain for MgSO₄ and misoprostol.

RWANDA

- I. Five priority interventions that are appropriate to be introduced or expanded in your country**
 1. Continue support to the introduction of PPH prevention at community level
 2. Improve quality of care at facility level both for PPH, PE/E
 3. Update guidelines norms and procedures for the use of misoprostol at community level
 4. Use the results of the quality of care survey for improving prevention and management of PPH, PE/E
 5. Strengthening essential newborn care
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues**
 1. Report to the MCH TWG
 2. Share results with each organization represented
 3. Present the results at MCH annual conference
 4. Create PPH sub TWG
- III. Two challenges that might or interfere with introducing/expanding the Five priority interventions**
 1. Funding
 2. Procurement process and commodities management

SENEGAL

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Extending AMTSL with oxytocin to whole country. Currently in 11 regions, 3 regions are not covered.
 2. Advocate for misoprostol approval for use by obstetricians.
 3. Introduce misoprostol in all facilities including community level (Abt is testing/piloting miso at community level).
 4. Advocate for better supply chain management for MgSO₄.
 5. Expansion of training for PE/E prevention and management including Calcium.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Organize a partner meeting with MOH and USAID and implementing partners to share key outputs.
 2. Share with midwife association the key outputs.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Financial: to expand AMTSL into 3 additional regions of the country.
 2. Obtaining approval for misoprostol for OB use.

SOUTH SUDAN

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Policy change: misoprostol into EML, supply chain and procurement
 2. Access to oxytocin and MgSO₄ and other drugs and supplies at regional, state and country; need to improve facilities
 3. Focus training on big killers (PPH and PE/E) at regional, state, country level. Should include monitoring and supervision and data collection and job aids
 4. BCC to encourage woman to come to ANC for complications
 5. Community-based distribution of misoprostol to woman
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Advocacy and training on two big killers
 2. Policy change
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. CHANGE-attitudes, etc.
 2. Re-programming
 3. Task shifting
 4. Data not captured
 5. Drug and logistic systems (supplies and missing staff)

UGANDA

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Community awareness for both PPH and PE/E.
 2. Scale up monitoring for labor progression using a partograph. We need champions to help promote labor monitoring.
 3. Expand AMTSL it needs to be available everywhere.
 4. Quality of care for both AMTSL and PE/E including training, job aids, support for existing human resources.
 5. Screening for PE/E including BP screening and proteinuria testing.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Modify policy briefs on PPH/ PE/E and include actions for National MOH, DHDs, professional bodies, parliament and national death review committees.
 2. Review Essential Drug List and supply list.
 3. Create protocol for use of oxytocin, misoprostol and MgSO₄ to be distributed in drug packs.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Getting partnerships to support these issues, including funding and technical assistance.
 2. Provider attitudes: change takes time.
 3. We need data and evidence.

ZAMBIA

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Scale up of ANC distribution of misoprostol 600mcg orally for prevention.
 2. Improve performance of AMTSL at facilities by using mentors, integrating AMTSL into supply tools in future, having an indicator.
 3. Expand maternity waiting homes to increase access to SBAs, management of PE, prevention of eclampsia, etc.
 4. Introduction of Brass V drape.
 5. Introduce use of MgSO₄ for severe PE
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Present at the next TAG for EmOC meeting.
 2. Write a report and debrief management.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Financial resources.
 2. Human resources.
 3. Supply chain.

ZANZIBAR

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Development of job aids for prevention/management of PPH, PE/E.
 2. Establish a MNCH technical working group and review data/presentations and identify way forward.
 3. Development if IEC/BCC campaign to improve community knowledge/awareness.
 4. Stakeholder meeting to review/ revise logistics system to ensure drug and supply availability.
 5. Strengthen role of associations to play a more active role in monitoring quality.
 6. Strengthen PSE.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. Report to everyone's respective heads.
 2. Report out at DPG and quality working group.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Human resource shortages.
 2. Current logistics system.
 3. Lack of space/sufficient beds/equipment.

ZIMBABWE

- I. Five priority interventions that are appropriate to be introduced or expanded in your country:**
 1. Misoprostol pilot through hospital.
 2. Skilled attendance at birth training.
 3. Improvement in quality.
 4. Free maternity services.
 5. Communication and transport through telephone.
 6. Waiting mother shelters-strengthen and revive.
- II. Two immediate steps that your country can take to disseminate information from this meeting to your colleagues.**
 1. MNH-WG dissemination.
 2. Revision of scale up map.
- III. Two challenges that might delay or interfere with introducing/expanding the Five priority interventions.**
 1. Financial resources.
 2. Systems for up skilling and pre-service.

APPENDIX E: HBB COURSE OBJECTIVES AND DETAILED AGENDA

Helping Babies BreatheSM Regional Training of Trainers for Africa

Africa Regional Meeting

Course Objectives

DAY ONE: PROVIDER COMPONENT (Thursday)

At the end of the provider component of the Helping Babies Breathe (HBB) training course, the participant will be able to:

- Describe the linkages among HBB materials
- State the key messages of HBB
- Carry out all of the key four exercises in HBB (preparation, routine care for all babies, The Golden Minute,SM continued ventilation with normal or slow heart rate)
- Identify regional practices in newborn resuscitation through group discussion and questions
- Demonstrate mastery of bag and mask ventilation (skill check)

DAY TWO: FACILITATOR COMPONENT (Friday)

At the end of the facilitator component of the HBB training course, the participant will be able to:

- Describe the evolution and purpose of the educational program HBB
- Demonstrate presentation of HBB content, including key messages from the Facilitator Flip Chart and incorporation of all the HBB learning materials
- Explain the interaction that occurs between a pair of participants using the neonatal simulator (roles of learner/teacher/baby)
- Facilitate learning in small groups to enable participants of various ability levels to:
 - Demonstrate skills in helping babies breathe
 - Lead practice and provide feedback on skills and performance
 - Moderate the experience of learners and obtain consensus on regional best practices
 - Provide cultural interpretation and localization (best and potentially harmful practices)
 - Create realistic scenarios
- Evaluate learner performance using the written/verbal knowledge check as well as OSCE A and B
- Prepare and supervise participants in continued learning in the workplace
- Access resources to plan and evaluate courses
- Explain the integration of HBB with other interventions according to the regional implementation plan

Course Agenda

Provider Component		Day One: 24 February 2011 (Thursday)
8:00	REGISTRATION	
9:00	OPENING CEREMONY – WELCOME AND INTRODUCTION OF FACULTY, OVERVIEW OF AGENDA	
	Welcoming remarks	
	Introduction of faculty	
	Overview of agenda	
9:45	PRESENTATION – NEONATAL RESUSCITATION IN THE CONTEXT OF ESSENTIAL NEWBORN CARE	
10:00	BREAK	
10:30	PREPARATION FOR SMALL GROUP LEARNING	
10:45	INTRODUCTION TO THE HELPING BABIES BREATHE (HBB) MATERIALS (SIMULATOR, FLIP CHARTS AND LEARNER BOOK) PREPARATION FOR A BIRTH	
	Demonstration and skill practice of preparation for a birth:	
	Identify a helper and review the emergency plan	
	Prepare the area for delivery	
	Wash hands	
	Prepare area for ventilation and check equipment	
	Discussion and questions on preparation for a birth	
11:15	ROUTINE CARE	
	Demonstration and skill practice on routine care	
	Dry thoroughly; if meconium, clear airway before drying	
	Evaluate crying	
	Keep warm	
	Check breathing	
	Clamp/tie and cut the cord	
	Discussion and questions on routine care	
11:45	THE GOLDEN MINUTE (CLEAR AIRWAY AND STIMULATE BREATHING)	
	Demonstration and skill practice on The Golden Minute – clear airway and stimulate breathing	
	Position the head, clear the airway, stimulate breathing	
	Evaluate breathing	
	Discussion and questions – The Golden Minute (part 1)	
12:30	LUNCH	
13:30	THE GOLDEN MINUTE (VENTILATION)	
	Demonstration and skill practice on The Golden Minute – ventilation	
	Initiate ventilation	
	Ventilate with bag and mask	
	Evaluate breathing	
	Discussion and questions on The Golden Minute (part 2)	

14:15 CONTINUED VENTILATION WITH NORMAL AND SLOW HEART RATE

Demonstration and skill practice on continued ventilation with normal heart rate:

- Call for help and improve ventilation
- Evaluate heart rate
- Continue ventilation and monitor with mother
- Continue ventilation and activate the emergency plan
- Support the family

Discussion and questions on continued ventilation with normal heart rate

Demonstration and skill practice of continued ventilation with slow heart rate

Discussion and questions on continued ventilation with slow heart rate

15:00 BREAK

15:30 PARTICIPANT EVALUATIONS – MASTERING THE ACTION PLAN

Overview of participant evaluations

Practice and scenario development

Knowledge check:

- Written
- Bag and mask ventilation skill check
- OSCE – Station A (The Golden Minute, part 1)

OSCE – Station B (Continued ventilation with normal heart rate)

FACILITATOR COMPONENT (PLENARY SESSION)

17:00 EVALUATION OF LEARNER KNOWLEDGE AND PERFORMANCE

Discussion and practice of administering:

- Written/verbal knowledge check
- Bag and mask skills check
- OSCE A and B

Review program criteria for successful completion of each evaluation and review any regional criteria for elements that must be successfully completed for each group trained

17:30 PREPARATION OF PARTICIPANTS FOR CONTINUED LEARNING IN THE WORKPLACE

- Elements of a successful scenario
- In situ skills practice and case scenarios

18:00 ADJOURN FOR THE DAY

Provider Component

Day Two: 25 February 2011 (Friday)

8:00	OVERVIEW OF PROVIDER COURSE OBJECTIVES, SUPPLEMENTAL MATERIAL AND FACILITATION TECHNIQUES
	Review of opening visualization
9:00	PRESENTATION OF THE CONTENT OF THE FACILITATOR FLIP CHART
	Practice exercise in use of the Facilitator Flip Chart
	Demonstration and practice of techniques to facilitate learning among providers of varied abilities
	Discussion and questions on continued learning at the workplace
10:30	BREAK
11:00	PRESENTATION OF CONTENT OF THE FACILITATOR FLIP CHART (CONTINUED)
12:30	LUNCH AND OPEN DISCUSSION
13:30	PLANNING AND EVALUATING COURSES (PLENARY SESSION)
15:00	BREAK
15:30	DISCUSSION OF COUNTRY LEVEL DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF HBB TRAINING QUALITY
	Developing a sustainable HBB training program
	Implementing quality HBB training
	Program monitoring and evaluation
17:00	CONCLUSION

APPENDIX F: HBB PARTICIPANT, OBSERVER AND FACILITATOR LISTS

PARTICIPANT LIST

NAME	COUNTRY	ORGANIZATION
Jhony Juarez	Angola	Jhpiego
Adelaide de Carvalho	Angola	Ministry of Health
Isilda Neves	Angola	Ministry of Health
Paulo Adão Campos	Angola	Agostinho Neto University
Ondina da Cruz Gonçalves Cardoso	Angola	Agostinho Neto University
Isabel Vashti Simbeye	Angola	UNICEF
Maria Costa	Angola	WHO
Keoagetse Kgwabi	Botswana	Nurses Council
Mongi Pyande	Congo-Brazzaville	WHO/AFRO
Ann Davenport	Equatorial Guinea	Jhpiego
Mataye Mideksa (Sr.)	Ethiopia	St. Luke Hospital
Eyaya Misgan (Dr.)	Ethiopia	Felege Hiwot Hospital
Sara Bahta (Sr.)	Ethiopia	Ayder Hospital
Achamyelesh Tsadik	Ethiopia	Hawassa University
Assalif Beyene	Ethiopia	D/Birhan/H/S/C
Hamdiya Mohammed (Sr.)	Ethiopia	Jijiga Karamara Hospital
Marta Kebede (Sr.)	Ethiopia	Yirgalem Hospital
Helen Menta (Sr.)	Ethiopia	Wolitya Hospital
Dula Ayana	Ethiopia	Pawe H/Sc/College
Solomon Gebre	Ethiopia	Wokiro Hospital
Birkety Mengistu	Ethiopia	Save the Children
Robel Alemu (Dr.)	Ethiopia	Gondar University
Abdujebar Ahmed	Ethiopia	Awash H/C
Mohammed Akber	Ethiopia	Semera H/Sc/College
Temesgen Mulugeta	Ethiopia	Mettu Karl Hospital
Aster Berhe	Ethiopia	Midwifery Association President
Abiy Seifu	Ethiopia	MCHIP/Save the Children
Bedru Areb	Ethiopia	Semera H/Sc/College
Tewodrose Tesfaye	Ethiopia	Assosa Hospital
Alemnesh TekleBerhan	Ethiopia	Jhpiego
Berhane Fekade	Ethiopia	Jhpiego
Roman Betru (Dr.)	Ethiopia	Yekatit Hospital
Lemlem Girma	Ethiopia	Jogula Hospital
Yodit Tegegn	Ethiopia	Dillchora Hospital
Abigail A. Kyei	Ghana	International Confederation of Midwives (ICM)

Appendix F: HBB Participant, Observer and Facilitator List

NAME	COUNTRY	ORGANIZATION
Martha Serwah Appiagyei	Ghana	Jhpiego
Joyce Ablordeppey	Ghana	Jhpiego Coporation
Sylvia Ayeley Deganus	Ghana	Tema General Hospital
Gloria Asare	Ghana	Ministry of Health
Elizabeth Oywer	Kenya	Nursing Council of Kenya
Nancy Kidula	Kenya	Jhpiego
Josephellar Mogoi	Kenya	Department of Adolescent Health
Khadija A Abdalla	Kenya	Division of Adolescent Health
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Comfort T.Gebeh	Liberia	MCHIP
Odell Kumeh	Liberia	Ministry of Health/Social Welfare
Samson K.Arzoaquoi	Liberia	Phebe Hospital
Rose Jallah Macauley	Liberia	Rebuilding Basic Health Services (RBHS)
Sarah Hodge	Liberia	Building Basic Health Services (RBHS)
Torsou Y. Jallabah	Liberia	MOH
Nancy T Moses	Liberia	UNICEF
Jean-Pierre Rakotovao	Madagascar	Jhpiego
Randrianjafimpanana Heritiana	Madagascar	SOMAPED
Luwiza Soko Puleni	Malawi	Jhpiego/MCHIP
Tambudzai Rashidi	Malawi	Jhpiego/MCHIP
Abigail Kazembe	Malawi	Kamuzu College of Nursing
Anna Chinombo	Malawi	SAVE/MCHIP
Fannie Kachale	Malawi	Reproductive Health Unit, Malawi Ministry of Health
Chimwemwe Mvula	Malawi	MoH
Martha Mondwa	Malawi	Nurses & Midwives Council
Toure Cheick Oumar	Mali	IntraHealth International
Rajcoomaree Ramgutee	Mauritius	Nursing Association
Jiuliana Malichocho	Mozambique	Ministry of Health
Natercia Fernandes	Mozambique	MCHIP
Kusum Thapa	Nepal	Jhpiego Nepal
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Aderinola Olaolu Moses	Nigeria	Federal Ministry of Health, Abuja
Habib Muhammad Sadauki	Nigeria	USAID-TSHIP Project, Bauchi
Ibrahim Alhassan Kabo	Nigeria	Targeted states high impact project, Bauchi
Ismail Binta	Nigeria	National Primary Health Care Development Agency
Lydia Regina Airede	Nigeria	MCHIP
Farouk M Jega	Nigeria	Pathfinder International
Olamuyiwa Oyinbo	Nigeria	Federal Ministry of Health Dates
Abayisenga Gloriose	Rwanda	MCHIP
Beata Mukarugwiro	Rwanda	MCHIP

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NAME	COUNTRY	ORGANIZATION
Dorothee Bamurange	Rwanda	Muhima Hospital
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Viviane Mukakarara	Rwanda	IntraHealth International
Juliette Mukankusi	Rwanda	School of Nursing and Midwifery
Stephen Rulisa	Rwanda	National University of Rwanda
Gylian Dorothy Mein	Seychelles	MOHSW
Wonder Petunia Mlotshwa	South Africa	DENOSA
Morgani Abdalla	South Sudan	Ministry of Health
Dr Mergani Abdalla	South Sudan	Ministry of Health
Janet Michael	South Sudan	Ministry of Health
Mary Rose Juwe Akile	South Sudan	Ministry of Health
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Projestine Selestine Muganyizi	Tanzania	AGOTA
Rose Laisser	Tanzania	Tanzania Midwives Association
Margaret Kiambo	Tanzania	MOHSW
Jane Msilu Mazigo	Tanzania	Nurses and Midwives Council
Koholeth Winani	Tanzania	MOH
Asia Hussein	Tanzania	UNICEF
Neema Mrutu	Tanzania	MOHSW
Gaudiosa Tibaijuka	Tanzania	Jhpiego
Miriam Gesa Mutabazi	Uganda	Management Sciences for Health
Latigo Mildred	Uganda	STRIDES/MSH
Wakida John Kennedy	Uganda	MoH
Emmanuel Byaruhanga	Uganda	Jhpiego GE MNH project
Kizito Mugenyi	Uganda	Jhpiego
Jessica Nsungwa Sabiti	Uganda	Ministry of Health
Miriam Sentongo	Uganda	MOH
Blami Dao	USA	JHPIEGO
Judith Standley	USA	MCHIP/Save the Children
Robinson Karuga	USA	Family Care International
Bernard K Kasawa	Zambia	ZISSP
Christopher C B Ng'andwe	Zambia	ZISSP
Beatrice M. Zulu	Zambia	University Teaching Hospital - UTH
Peggy Chibuye	Zambia	Midwifery Association of Zambia (in process)
Joyce Nachangwa Musenga	Zambia	Ndola School of Nursing, Widwifely & threatre
Chipoya Chipoya	Zambia	University Teaching Hospital
Theresa Chansa Sikateyo	Zambia	General Nursing Council of Zambia
Elizabeth Dangaiso	Zimbabwe	MCHIP
Engeline Mawere	Zimbabwe	Jhpiego

Appendix F: HBB Participant, Observer and Facilitator List

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Margaret Nyandoro	Zimbabwe	Ministry of Health and Child Welfare
Shelly E. Chitsungo	Zimbabwe	UNICEF
Regina Nsipa Kayemba	Zimbabwe	Parirenyatwa Hospital School of Nursing

OBSERVER LIST

NAME	COUNTRY	ORGANIZATION
Peter Arimi	Kenya	USAID
Lilian Mutea	Kenya	USAID
Josephine Freeman	Liberia	Unicef
Stella Chinwe Subah	Liberia	USAID
Jocelyne Andriamiadana	Madagascar	USAID
Jérémie Zoungarana	Rwanda	Jhpiego
Soukeynatou Traore	Rwanda	USAID
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Janex Kabarangira	Uganda	USAID
Deb Armbruster	USA	USAID
Holly Blanchard	USA	MCHIP
Karen Fogg	USA	USAID
Lily Kak	USA	USAID
Mary Ellen Stanton	USA	USAID
Nahed Matta	USA	USAID
Peter Johnson	USA	Jhpiego

FACILITATOR LIST

NAME	COUNTRY	ORGANIZATION
Nalini Singhal	Canada	Alberta Children's Hospital and AAP Volunteer
Alemtsehay Mekonen	Ethiopia	Gondar University
Bogale Worku	Ethiopia	AAU
Gebretensay Gebregeiorgis	Ethiopia	ZMH
Hailu Berhan	Ethiopia	Ghandi Hospital
Meskerem Timerga	Ethiopia	Black Lion Hospital
Mintwab Gelagay	Ethiopia	Jhpiego
Mohammed Reshid	Ethiopia	MOH
Mulualem Gessesse	Ethiopia	Yekatit 12
Nigist Tesfaye	Ethiopia	MOH
Tigist Bacha	Ethiopia	AAU
Woizero Hiwot Mengistu	Ethiopia	Jhpiego

Appendix F: HBB Participant, Observer and Facilitator List

NAME	COUNTRY	ORGANIZATION
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Emmanuel Otolorin	Nigeria	MCHIP
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Ingrid Laerdal	Norway	Laerdal Medical
Tore Laerdal	Norway	Laerdal Foundation for Acute Medicine
Georgina Msemo	Tanzania	Ministry of Health and Social welfare
Odongo Odiyo	Tanzania	East Central and Southern African Health Community
Connie Namajji	Uganda	URC/HCI Uganda
Sarah Naikoba	Uganda	Ministry of Health
Doyin Oluwole	USA	Africa's Health in 2010
Joseph de Graft-Johnson	USA	MCHIP
Stella Abwao	USA	MCHIP/Save the Children
Troy A. Jacobs	USA	USAID/GH/HIDN/MCH
Winifride Mwebesa	USA	MCHIP/Save the Children

APPENDIX G: HBB KNOWLEDGE AND SKILLS ASSESSMENTS

Knowledge check

Select the best answer to each question or statement
Circle the letter of the correct answer

1. In the first minute after birth, you should
 - a. Bathe the baby
 - b. Help the baby breathe
 - c. Feed the baby
 - d. Not touch the baby
2. To prepare for a birth
 - a. You identify a helper and review the emergency plan
 - b. You ask everyone but the mother to leave the area
 - c. You prepare equipment only when you need it
 - d. You do not need a helper
3. To prepare the area for delivery
 - a. Open all the doors and windows to get fresh air
 - b. A clean space for the baby will not be required
 - c. Make sure the area is clean, warm, and well-lighted
 - d. Keep the room temperature cold
4. Which baby can receive routine care after birth?
 - a. A baby who is not breathing
 - b. A baby who is gasping
 - c. A baby who is crying and/or breathing well
 - d. A baby who is limp
5. Routine care for a healthy baby at birth includes
 - a. Drying, removing the wet cloth, and bathing the baby
 - b. Drying, removing the wet cloth, and positioning the baby skin-to-skin
 - c. Bathing and putting clean clothes on the baby
 - d. Drying and wrapping the baby in the wet cloth
6. When should the umbilical cord be clamped or tied and cut during routine care?
 - a. After the placenta is delivered
 - b. Around 1-3 minutes after birth
 - c. Immediately after the baby is born
 - d. Before a baby has cried
7. A baby is quiet, limp and not breathing at birth. What should you do?
 - a. Dry the baby thoroughly
 - b. Shake the baby
 - c. Throw cold water on the face
 - d. Hold the baby upside down
8. A baby is born through meconium-stained amniotic fluid. Which statement is TRUE?
 - a. Stimulate the baby and then clear the airway
 - b. Meconium cannot be inhaled into the lungs
 - c. Clear the airway before drying the baby
 - d. All babies born through meconium-stained amniotic fluid can receive routine care
9. What should you do in The Golden MinuteSM?
 - a. Bathe the baby
 - b. Deliver the placenta
 - c. Evaluate the heart rate
 - d. Help a baby breathe if necessary
10. A newborn baby is quiet, limp and not crying. The baby does not respond to steps to stimulate breathing. What should you do next?
 - a. Slap the baby's back
 - b. Hold the baby upside down
 - c. Squeeze the baby's ribs
 - d. Begin ventilation
11. Which of the following statements about ventilation with bag and mask is TRUE?
 - a. The mask should cover the eyes
 - b. Air should escape between the mask and face
 - c. Squeeze the bag to produce gentle movement of the chest
 - d. Squeeze the bag to give 80 to 100 breaths per minute
12. Which of the following signs MUST be monitored in a baby during the first few hours after birth?
 - a. Length
 - b. Breathing
 - c. Smile
 - d. Urine output
13. A baby's chest is not moving with bag and mask ventilation. What should you do?
 - a. Stop ventilation
 - b. Reapply the mask to get a better seal
 - c. Slap the baby's back
 - d. Give medicine to the baby
14. You can stop ventilation if:
 - a. Baby is blue and limp
 - b. Baby's heart rate is 80 per minute
 - c. Baby's heart rate is 120 per minute and the chest is not moving
 - d. Baby's heart rate is 120 per minute and the baby is breathing or crying
15. What should you do to keep the baby warm?
 - a. Open all the windows to allow warm air to circulate
 - b. Give the baby a bath after birth
 - c. Place hot water bottles next to the baby's skin
 - d. Place the baby skin-to-skin with mother
16. What should you do to keep the baby clean?
 - a. Wash your hands before touching the baby and help mother wash her hands before breastfeeding
 - b. Reuse the suction device before cleaning
 - c. Keep the umbilical cord tightly covered
 - d. Do not touch the baby
17. A newborn baby's heart rate should be:
 - a. Faster than your heart rate
 - b. Slower than your heart rate

Bag and mask ventilation – skill check

Complete this evaluation with learners before they attempt the OSCE evaluations. Use the comments below the numbered steps to score the performance. Note the number of steps done correctly on the first attempt. Give feedback to the learner. Repeat the evaluation until all steps are done correctly.

	Done	Not done
1. Check equipment and select the correct mask Test function of bag and mask. Make sure mask fits the baby's face.	<input type="checkbox"/>	<input type="checkbox"/>
2. Apply the mask to make a firm seal Extend the head, place mask on the chin, then over the mouth and nose. A firm seal permits chest movement when the bag is squeezed.	<input type="checkbox"/>	<input type="checkbox"/>
3. Ventilate at 40 breaths per minute The rate should not be less than 30 or more than 50 breaths per minute.	<input type="checkbox"/>	<input type="checkbox"/>
4. Look for chest movement Check that every ventilation breath produces chest movement.	<input type="checkbox"/>	<input type="checkbox"/>
5. Improve ventilation if the chest does not move: a) Head – reapply mask and reposition head b) Mouth – clear secretions and open the mouth c) Bag – squeeze the bag harder	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Score on first attempt _____ of 7

All steps done correctly _____ (facilitator initials)

Evaluation continued

OSCE – Station A**Instructions to the facilitator:**

Read aloud to the learner the following instructions and the case. Provide prompts where shown in **red**. As you observe the learner, tick ☒ the boxes "Done" or "Not Done" for each activity. Indicate the baby's response to the learner's actions using the neonatal simulator or words if using a mannequin. For example, when the learners evaluate crying, show or say that the baby is not crying.

"I am going to read a role play case. Please listen carefully, and then show me the actions you would take. I will indicate the baby's response with the simulator (OR in words), but I will provide no other feedback until the end of the case."

"You are called to assist the delivery of a term baby. There are no complications in the pregnancy. The baby will be born in less than 10 minutes. Introduce yourself and prepare for the birth and care of the baby."

	Done	Not Done
Prepares for birth		
Identifies a helper and makes an emergency plan.....	<input type="checkbox"/>	<input type="checkbox"/>
Prepares the area for delivery.....	<input type="checkbox"/>	<input type="checkbox"/>
Cleans hands and maintains clean technique throughout.....	<input type="checkbox"/>	<input type="checkbox"/>
Prepares an area for ventilation and checks equipment.....	<input type="checkbox"/>	<input type="checkbox"/>
 Prompt: After 5-7 minutes give baby to learner and say, "The amniotic fluid is clear. Show how you will care for the baby."		
DRIES THOROUGHLY	<input type="checkbox"/> *	<input type="checkbox"/>
Removes wet cloth.....	<input type="checkbox"/>	<input type="checkbox"/>
Evaluates crying		
Prompt: Show or say the baby is not crying.	<input type="checkbox"/> *	<input type="checkbox"/>
RECOGNIZES BABY IS NOT CRYING	<input type="checkbox"/>	<input type="checkbox"/>
Clears airway and stimulates breathing		
Keeps warm.....	<input type="checkbox"/>	<input type="checkbox"/>
POSITIONS HEAD AND CLEARS AIRWAY	<input type="checkbox"/> *	<input type="checkbox"/>
Stimulates breathing by rubbing the back.....	<input type="checkbox"/>	<input type="checkbox"/>
Evaluates breathing		
Prompt: Show or say the baby is breathing well.	<input type="checkbox"/>	<input type="checkbox"/>
Recognizes baby is breathing well.....	<input type="checkbox"/>	<input type="checkbox"/>
Clamps or ties and cuts the cord.....	<input type="checkbox"/>	<input type="checkbox"/>
Positions skin-to-skin on mother's chest and communicates with mother.....	<input type="checkbox"/>	<input type="checkbox"/>

SCORING:

Successful completion requires a total score of 10 correct of 13 and "Done" must be ticked for **DRIES THOROUGHLY, RECOGNIZES BABY IS NOT CRYING, AND POSITIONS HEAD AND CLEARS AIRWAY.**

Number Done Correctly Facilitator initials

OSCE – Station B

Instructions to the facilitator:

Read aloud to the learner the following instructions and the case. Provide prompts where shown in **red**. As you observe the learner, tick ☒ the boxes "Done" or "Not Done" for each activity. Indicate the baby's response to the learner's actions using the neonatal simulator or words. Note the time between birth and beginning ventilation. Comment on the learner's performance only at the end of the case.

"I am going to read a role play case. Please listen carefully, and then show me how you would care for this baby. I will indicate the baby's response with the simulator (OR in words). I will provide no other feedback until the end of the case."
 "You are called to assist at the birth of 34 week (7 ½ months) gestation baby.
 You arrive two minutes prior to birth. Introduce yourself and show what you will do."

	Done	Not Done
Prepares for a birth	<input type="checkbox"/>	<input type="checkbox"/>
Identifies a helper, prepares the area for delivery, cleans hands, prepares an area for ventilation, and checks equipment		
Prompt: After 2 minutes give baby to learner and say, "The amniotic fluid is clear. Show how you will care for the baby."		
Dries thoroughly and removes wet cloth	<input type="checkbox"/>	<input type="checkbox"/>
Evaluates crying Prompt: Show or say the baby is not crying.		
Recognizes baby is not crying	<input type="checkbox"/>	<input type="checkbox"/>
Clears airway and stimulates breathing		
Keeps warm, positions head, clears airway	<input type="checkbox"/>	<input type="checkbox"/>
Stimulates breathing by rubbing the back	<input type="checkbox"/>	<input type="checkbox"/>
Evaluates breathing		
RECOGNIZES BABY IS NOT BREATHING	<input type="checkbox"/>	<input type="checkbox"/>
Ventilates with bag and mask		
Cuts cord and moves to area for ventilation OR ventilates by mother	<input type="checkbox"/>	<input type="checkbox"/>
Starts ventilation within The Golden Minute SM (at _____ seconds)	<input type="checkbox"/>	<input type="checkbox"/>
VENTILATES AT 40 BREATHS/MINUTE (30-50 ACCEPTABLE)	<input type="checkbox"/>	<input type="checkbox"/>
LOOKS FOR CHEST MOVEMENT	<input type="checkbox"/>	<input type="checkbox"/>
Evaluates breathing Prompt: Show or say the baby is not breathing.		
Recognizes baby is not breathing	<input type="checkbox"/>	<input type="checkbox"/>
Calls for help	<input type="checkbox"/>	<input type="checkbox"/>
Continues ventilation	<input type="checkbox"/>	<input type="checkbox"/>
Prompt: Say, "Please show what to do if the chest is not moving with ventilation."		
After one or more steps to improve ventilation, say "The chest is moving now."		
IMPROVES VENTILATION	<input type="checkbox"/>	<input type="checkbox"/>
Head- repositions head, reapplies mask		
Mouth- clears secretions, opens mouth slightly		
Bag- squeezes bag harder		
Evaluates breathing and heart rate		
Prompt: Show or say the baby is not breathing; heart rate is normal.		
Recognizes baby is not breathing but heart rate is normal	<input type="checkbox"/>	<input type="checkbox"/>
Continues ventilation	<input type="checkbox"/>	<input type="checkbox"/>
Prompt: After 3 minutes show or say, "The heart rate is 120 per minute and the baby is breathing."		
Recognizes baby is breathing and heart rate is normal	<input type="checkbox"/>	<input type="checkbox"/>
Stops ventilation; monitors baby and communicates with mother	<input type="checkbox"/>	<input type="checkbox"/>

SCORING:

Successful completion requires a total score of 14 correct of 18 and "done" must be ticked for **RECOGNIZES BABY IS NOT BREATHING, VENTILATES AT 40 BREATHS/MINUTE, LOOKS FOR CHEST MOVEMENT, AND IMPROVES VENTILATION**

APPENDIX H: ADDIS HBB FACILITATOR GUIDE

Helping Babies BreatheSM

Regional Training of Trainers for Africa

Africa Regional Meeting

Facilitator Guide

Facilitator's notes including session structure, process, responsible person(s) and resources/materials needed are listed in orange boxes.

Provider Component

Day One: 24 February 2011 (Thursday)

8:00	REGISTRATION	
9:00	OPENING CEREMONY—WELCOME AND INTRODUCTION OF FACULTY, OVERVIEW OF AGENDA	
	Welcoming remarks	
	Introduction of faculty	
	Overview of agenda	
	<div>Plenary session: Acknowledge leadership, stakeholders, supporters Introduce faculty and staff Explain course objectives and agenda Highlight: Goal of the provider component of the HBB training is to have the knowledge, skills and equipment to help a baby breathe at Goal of facilitator component of the HBB training is to help others gain this ability. Emphasis is on paired learning. Need for participants to suspend expert knowledge and become immersed as learners.</div>	<div>Lead facilitator Course objectives and agenda</div>
9:45	PRESENTATION—NEONATAL RESUSCITATION IN THE CONTEXT OF ESSENTIAL NEWBORN CARE	
	<div>Plenary session: PowerPoint presentation</div>	<div>Guest presenter</div>
10:00	BREAK	
	During the break, participants should assemble in the assigned training rooms.	

10:30 PREPARATION FOR SMALL GROUP LEARNING

<p>Small group learning session:</p> <p>Course facilitators for each of the small groups to invite participants to introduce themselves at the individual tables and share:</p> <p>What brings you to this workshop?</p> <p>What do you want to learn?</p> <p>Why do you want to be a facilitator?</p> <p>Ensure each participant in the small group has completed and submitted the participant course expectation form.</p> <p>Conduct pretest written knowledge check</p> <p>Opening visualization:</p> <p>Lead facilitator in each assigned training room to guide participants through the visualization exercise of the birth of a baby who is not breathing and one who is breathing.</p>	<p>Course facilitators</p> <p>Participant course expectation forms</p> <p>Pretest written knowledge check forms</p>
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10:45 INTRODUCTION TO THE HELPING BABIES BREATHE (HBB) MATERIALS (SIMULATOR, FLIP CHARTS AND LEARNER BOOK) PREPARATION FOR A BIRTH

Introduction to the HBB materials:

Simulator

Flip chart -layout and sections (presentation/demonstration, Practice with the Action Plan, Check yourself)

Learner workbook

Preparation for a birth:

Demonstration and skill practice of preparation for a birth:

Identify a helper and review the emergency plan

Prepare the area for delivery

Wash hands

Prepare area for ventilation and check equipment

Small group learning session:

Review the HBB training materials with participants and emphasize linkage among HBB materials

Facilitators demonstrate preparation for a birth exercise

Learner pairs practice in turns to prepare for a birth

Course facilitators:

Observe and provide feedback to learners

Encourage repetition to correct/perfect

Guide participants through the practice with the action plan and check yourself questions

Group discussion

Discussion and questions on preparation for a birth

Course facilitators

HBB materials—
simulator, flip
chart, learner
workbook

Water to fill
simulator

11:15 ROUTINE CARE

Demonstration and skill practice on routine care:

Dry thoroughly; if meconium, clear airway before drying

Evaluate crying

Keep warm

Check breathing

Clamp/tie and cut the cord

Discussion and questions on routine care

	<p>Small group learning session:</p> <ul style="list-style-type: none"> Facilitators demonstrate routine care exercise with emphasis on learning with the neonatal simulator Learner pairs, in turns, practice the routine care steps (repeat above for each of four flip chart pages and skills) Course facilitators Observe and provide feedback to learners Encourage repetition to correct/perfect Guide participants through the practice with the action plan and check yourself questions <p>Group discussion</p>	<p>Course facilitators HBB materials—simulator, flip chart, learner workbook</p> <p>Water to fill simulator</p>
11:45	THE GOLDEN MINUTE (CLEAR AIRWAY AND STIMULATE BREATHING)	
	<p>Demonstration and skill practice on The Golden Minute—clear airway and stimulate breathing:</p> <ul style="list-style-type: none"> Position the head, clear the airway, stimulate breathing Evaluate breathing 	
	<p>Small group learning session:</p> <ul style="list-style-type: none"> Facilitators demonstrate The Golden Minute—clear airway and stimulate breathing Learner pairs, in turns, practice clearing the airway and stimulating breathing (repeat above for each of two flip chart pages and skills) Course facilitators: <ul style="list-style-type: none"> Observe and provide feedback to learners Encourage repetition to correct/perfect (scenarios with and without meconium-stained amniotic fluid) Guide participants through the practice with the action plan and check yourself questions <p>Group discussion</p>	<p>Course facilitators</p>
	Discussion and questions—The Golden Minute (part 1)	
12:30	LUNCH	
13:30	THE GOLDEN MINUTE (VENTILATION)	
	<p>Demonstration and skill practice on The Golden Minute—ventilation:</p> <ul style="list-style-type: none"> Initiate ventilation Ventilate with bag and mask Evaluate breathing 	
	Discussion and questions on The Golden Minute (part 2)	
	<p>Small group learning session:</p> <ul style="list-style-type: none"> Facilitators demonstrate The Golden Minute—ventilation Learner pairs, in turns, practice ventilation (repeat above for each of three flip chart pages and skills) Course facilitators: <ul style="list-style-type: none"> Observe and provide feedback to learners Encourage repetition to correct/perfect Guide participants through the practice with the action plan and check yourself questions <p>Group discussion</p>	<p>Course facilitators</p>

14:15 CONTINUED VENTILATION WITH NORMAL AND SLOW HEART RATE

Demonstration and skill practice on continued ventilation with normal heart rate:

Call for help and improve ventilation

Evaluate heart rate

Continue ventilation and monitor with mother

Continue ventilation and activate the emergency plan

Support the family

Discussion and questions on continued ventilation with normal heart rate

Demonstration and skills practice of continued ventilation with slow heart rate

Discussion and questions on continued ventilation with slow heart rate

Small group learning session:

Facilitators demonstrate continued ventilation with normal heart rate

Learner pairs, in turns, practice continued ventilation with normal heart rate (repeat above for each of five flip chart pages and skills)

Course facilitators:

Observe and provide feedback to learners

Encourage repetition to correct/perfect

Guide participants through the practice with the action plan and check yourself questions

Group discussion:

Facilitators demonstrate continued ventilation with normal heart rate

Group discussion

**Course
facilitators**

Discussion and questions on continued ventilation with normal heart rate

Demonstration and skill practice of continued ventilation with slow heart rate

Discussion and questions on continued ventilation with slow heart rate

15:00 BREAK**15:30 PARTICIPANT EVALUATIONS—MASTERING THE ACTION PLAN**

Overview of participant evaluations

Practice and scenario development

Knowledge check:

Written

Bag and mask ventilation skill check

OSCE—Station A (The Golden Minute, part 1)

OSCE—Station B (Continued ventilation with normal heart rate)

Explain expectations for the evaluations

Highlight the Trace Six Cases—p. 37 of Learner Workbook

Faculty does first evaluation (bag and mask, OSCE A and OSCE B) with a single participant, then participant who has successfully completed the evaluation takes the role of a facilitator to qualify the next participant, etc. with feedback from faculty and other small group members

**Course
facilitators**

FACILITATOR COMPONENT (PLENARY SESSION)**17:00 EVALUATION OF LEARNER KNOWLEDGE AND PERFORMANCE**

Discussion and practice of administering:

Written/verbal knowledge check

Bag and mask skills check

OSCE A and B

Review program criteria for successful completion of each evaluation and review any regional criteria for elements that must be successfully completed for each group trained.

Plenary session:

For the written/verbal knowledge check—locate answer key; practice verbal administration of the questions; discuss advantages/disadvantages of written and verbal formats; discuss any difficult questions and how to remediate learners who do not pass

Discuss the use of Mastering bag and mask ventilation as a formative evaluation (repeated until mastery – 100% correct performance—attained)

For OSCE A and B, practice giving clear responses with the neonatal simulator or verbal responses with a mannequin; hold feedback until the end of the scenario.

**Lead facilitator
assisted by other
course facilitators**

17:30 PREPARATION OF PARTICIPANTS FOR CONTINUED LEARNING IN THE WORKPLACE

Elements of a successful scenario

In situ skills practice and case scenarios

Plenary session

Analyze the elements of a successful scenario (description of infant, mention of pertinent complications or risk factors, decision on responses to evaluation questions consistent with infant description and risk factors)

Invite facilitator candidates to describe a difficult resuscitation and have the small group design a scenario; encourage facilitator candidates to share these to start a file of scenarios for use in their courses

Review the self-reflection questions on page 38 of the Learner Workbook and develop (or disseminate) locally appropriate systems to promote self-reflection and peer learning (e.g., resuscitation logs, resuscitation debriefing in the workplace, case audits)

Discuss the use of Mastering bag and mask ventilation as in situ skills practice and case scenarios as ongoing performance improvement—how frequent, short refresher training can be incorporated into existing training structures.

**Lead facilitator
assisted by other
course facilitators**

18:00 ADJOURN FOR THE DAY

Review of agenda for Day Two and assignments for facilitator candidates:

Prepare a regionally appropriate dialogue on causes of death in newborns

Present a page from the Facilitator Flip Chart to the small group

Lead an exercise for the small group.

**Course
facilitators**

Provider Component**Day Two: 25 February 2011 (Friday)****8:00** Overview of provider course objectives, supplemental material and facilitation techniques

Review of opening visualization

Small group learning session:

Review provider course objectives (What you will learn, pp. 4, 5 in Learner Workbook). Highlight purpose is to practice facilitation skills and emphasize localization of the course

Discuss what supplemental material to present in the orientation (use Tool 7 from Implementation Guide)

Discuss techniques to draw out learner experiences and moderate them

Invite a facilitator candidate to present the opening dialogue and visualization exercise for a provider course (and provide feedback from the group).

**Course
facilitators**Implementation
Guide**9:00** Presentation of the content of the Facilitator Flip Chart

Practice exercise in use of the Facilitator Flip Chart

Demonstration and practice of techniques to facilitate learning among providers of varied abilities

Discussion and questions on continued learning at the workplace

Small group learning session

Analyze the key learning points, skills and tips to promote learning for each page of the Facilitator Flip Chart (include review of background and educational advice section):

Emphasize active learning with practice during each page of Flip Chart

Identify the most frequent problems in performing skills and how to remediate

Review the purpose and technique for providing feedback

Provide cultural interpretation and localization (Use Tools 5, 6 in Implementation Guide) along with review of each Flip Chart page

Use check yourself questions to indicate gaps in understanding and need for further explanation

Invite each facilitator candidate to present a page from the Facilitator Flip Chart (and provide feedback from the group)

Invite each facilitator candidate to lead the small group in an exercise while working through the content of the Facilitator Flip Chart (and provide feedback from the group)

Discuss techniques to facilitate learning with providers of various abilities

Demonstrate, invite a learner to participate in demonstration, have a learner demonstrate, have all learners practice in pairs with feedback from one another and facilitator, invite learners to practice in pairs only with feedback from one another

Use teaching tips provided in Tools 10 and 11 of Implementation Guide

Pair experienced and novice providers from the same workplace

Support the group in working together to help find solutions for understanding difficult concepts or performing difficult skills

Lead group discussion questions with the goal of reaching consensus for a workplace; help participants evaluate and interpret their experiences (e.g., helpful, harmful, neutral practices; physiologic principles underlying some traditional practices).

**Course
facilitators****10:30** **BREAK**

11:00	PRESENTATION OF CONTENT OF THE FACILITATOR FLIP CHART (CONTINUED)	
	Small group learning session	Course facilitators
12:30	LUNCH AND OPEN DISCUSSION	
13:30	PLANNING AND EVALUATING COURSES (PLENARY SESSION)	
	<p>Plenary session:</p> <ul style="list-style-type: none"> Review the timeline for course preparation (Tool 8 in Implementation Guide) Discuss equipment procurement—neonatal simulators, educational materials, bag and mask and additional local equipment and supplies Review advice for course facilitators in back of Facilitator Flip Chart (24b) Review additional resources for facilitators: <ul style="list-style-type: none"> Preparing the neonatal simulator (Tool 7 in Implementation Guide) Cleaning and testing equipment (Flip Chart page 25) More resources section in Learner Workbook (pages 39-43) Implementation Guide (Web resource and PDF of Tools) www.helpingbabiesbreathe.org Instructor video, videos of skills, videos of clinical evaluation points Review a template for a course evaluation (Tool 16 in Implementation Guide) modified to meet local needs Practice emptying/filling neonatal simulator and dis-assembling/re-assembling the ventilation bag 	Lead facilitator assisted by other course facilitators
15:00	BREAK	
15:30	DISCUSSION OF COUNTRY LEVEL DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF HBB TRAINING QUALITY	
	Developing a sustainable HBB training program	
	Implementing quality HBB training	
	Program monitoring and evaluation	
	<p>Plenary session:</p> <ul style="list-style-type: none"> Share and discuss with MOH representatives/country teams: <ul style="list-style-type: none"> Developing a sustainable HBB training program Initial training of providers; integration of HBB and ENC (other interventions); relationship of HBB and NRP Supervision of continued learning in the workplace Maintaining quality of training; updating with ILCOR neonatal resuscitation guidelines Documentation and reporting of program activity Program monitoring and evaluation Question-and-answer session with facilitator candidates 	<p>Lead facilitator assisted by other course facilitators</p> <p>Guest presenter(s)</p>
17:00	CONCLUSION	
	<p>Plenary session</p> <ul style="list-style-type: none"> Recap facilitator responsibilities and regional commitment (expected number of courses provided, learners trained, workplace supervision, etc.) Answer questions regarding national or regional plan for dissemination Describe the process to become a course leader or master trainer Complete course evaluations Present certificates and take pictures 	<p>Lead facilitator assisted by other course facilitators</p> <p>Certificates</p>

Additional Notes on Course Organization and Facilitation

Facilitators and trainees will be pre-assigned into groups so that trainees when they register know what group they belong to.

The total length of the provider course within the facilitator workshop will depend on the participants. Master trainers should be alert that participants who have received prior training may need to re-learn or un-learn some ways of thinking and patterns of behavior. The provider segment may be completed in as little as two to four hours or as long as two days to allow for consolidation of new learning prior to assessment of knowledge and skills.

The ideal facilitator workshop is small, with approximately 18–24 participants. One master trainer should lead the course, and each group of six participants works with a master trainer.

The participants should experience a provider course, given that they will present it for future learners. The course leader (master trainer) presents each flip chart page and demonstrates each skill to the entire group. During the presentation of each page of the Facilitator Flip Chart, the participants in a facilitator workshop should be able to see simultaneously the front image under discussion and the text on the back of the previous page that the master trainer is using for guidance. Table facilitators (who are also master trainers) may choose to repeat the demonstration for a group of six learners or simply provide feedback on their practice. Each page concludes with linkage to the Action Plan and participant(s) answering the check yourself questions. This can be done within the small groups.

Exercises after each section of the Learner Workbook should be demonstrated in the groups of six learners. Participants should work through each exercise in the role of the birth attendant and the role of the helper (who provides the responses of the neonatal simulator). Responses to the Group Discussion questions may represent circumstances in a number of different facilities, so it may not be possible to reach consensus on a technique or practice.

If video equipment is available, segments from the HBB Instructor Video can be used to model the teaching and facilitation interaction. The video also presents demonstrations of each of the six exercises, close-up views of the skills and clinical vignettes illustrating the evaluation points.

At the end of the provider course, participants should design scenarios for additional practice and practice with the checklist Mastering bag and mask ventilation. The methods for promoting continued learning should be discussed, but will be considered in depth in the facilitator segment.

Facilitator candidates must successfully complete all assessments (written/verbal, bag and mask ventilation skills, OSCE A and B).

The proposed agenda can be modified to fit local timeframes and accommodate additional content. For example, travel schedules may require a later start time or earlier conclusion. When training master trainers or those who will serve as mentors at a national level, the final sessions on dissemination, quality monitoring, sustainability and measurement of outcomes will be expanded. The master trainer and mentor course presents information that is necessary to link local and regional efforts to the national plan for resuscitation training and neonatal health.

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