

Helping Babies Breathe

Lessons learned guiding the way forward



A 5-year report from the HBB Global Development Alliance



Helping Babies Breathe
THE GOLDEN MINUTE

survive & thrive

professional associations, private sector and global health scholars
saving mothers, newborns and children

On the cover:

27 January 2014, a happy birthday at Jinja hospital in Uganda

Photo: Ida Neuman, Laerdal Global Health.

Helping Babies Breathe

Lessons learned guiding the way forward

June 7, 2015

Editors

Lily P. Kak¹, Joseph Johnson², Robert McPherson²,
William Keenan³, Eileen Schoen³

*“Let us try.
This baby might
come back”*



Emily looked down to greet her child, a baby boy, and saw a limp, lifeless body. What should have been a moment of great joy turned into a terrifying struggle to breathe life into her newborn son. Nurse Mary Wekesa dried Baby Job vigorously, cut the umbilical cord, transferred the limp newborn to a dry blanket, and wrapped the motionless baby in the blanket, leaving his chest exposed. She placed a circular rubber mask over his bluish mouth and nose and squeezed a bulb-like attachment that made his chest rise and fall as air inflated his lungs. Suddenly, the loud cries of baby Job rang through the maternity ward.

Mary helped one newborn baby take its first breath of life. Baby Job may be “only” one newborn from a tiny, rural village in Kenya but to the partners of this Alliance, he represents *every single reason* for the work that they do, each day, on behalf of Every Newborn.

Baby Job was the first recorded baby ever saved by Helping Babies Breathe in Kenya. Without HBB, Baby Job and thousands of others like him would not have been saved in the 77 countries where HBB has rolled out since 2010.

*Story contributed by Sherri Bucher,
Indiana University*

Foreword

Global Development Alliances (GDAs) are USAID's premiere model for public-private partnerships, helping to improve the social and economic conditions in developing countries and deepen USAID's development impact. The Helping Babies Breathe partnership has implemented USAID's GDA model and has clearly demonstrated that this is an effective model for rapid global rollout of a health intervention.

I congratulate the partnership for its achievements. This GDA exemplifies the power of partnership; it has leveraged and relied on each partner's assets, shared knowledge, influence, networks, and program platforms and significantly increased facility-readiness and access to newborn resuscitation. Among the 1,500 public-private partnerships that USAID has established since 2001, this GDA received USAID's 2011 Excellence Award. Building on its strength, Secretary Clinton announced the establishment of the Survive and Thrive GDA in 2012, broadening the scope of the partnership to include maternal, newborn, and child health interventions with even greater potential for contributing to the US Government's goal of ending preventable child and maternal deaths.

Katie Taylor

*Deputy Assistant Administrator, Global Health
Deputy Child and Maternal Survival Coordinator
U.S. Agency for International Development*

The concept behind *Helping Babies Breathe* had been taking shape in the minds of AAP volunteers and staff for many years. Beginning in the 1980s, the AAP advocated strongly for at least one person skilled in neonatal resuscitation to be present at every birth in the United States. A daunting task at the time, it was embraced by leadership and eventually accomplished, largely through a dedicated volunteer network and like-minded nursing colleagues. Many of the same individuals responded to international requests for training and came to realize that a program focused on hospital births was simply not enough to address the global burden of deaths. No matter where in the world or what the economic circumstances, all mothers and babies deserve to have an attended birth.

Born of the shared conviction that every human life has value, what is now known as *Helping Babies Breathe* took shape. The determination to develop the best educational materials and most effective learning methodology was strong. Quality, evidence base, credibility, and reaching out to a diverse set of partners throughout the development and evaluation process built a foundation for the program that allowed it to reach communities in resource-limited areas of the world and make a difference. We continue to be motivated by our commitment that all mothers and babies deserve the best possible chance at life.

Susan Niermeyer, MD, MPH, FAAP

*On behalf of the Helping Babies Breathe Planning Group and
The American Academy of Pediatrics*

Abbreviations

AAP	American Academy of Pediatrics
BEmONC	Basic Emergency Obstetric and Newborn Care
ENC	Essential Newborn Care
CIFF	Children's Investment Fund Foundation
CSBA	Community Skilled Birth Attendant
FMOH	Federal Ministry of Health
GDA	Global Development Alliance
HBB	Helping Babies Breathe
HBS	Helping Babies Survive
HMIS	Health Management Information System
iccdr,b	Institute for Childhood Diarrheal Diseases, Bangladesh
ILCOR	International Liaison Committee on Resuscitation
IMNCI	Integrated Management of Neonatal and Childhood Illness
LDSC	Latter-day Saint Charities
MCHIP	Maternal and Child Health Integrated Program
MCSP	Maternal and Child Survival Program
MNH	Maternal and Newborn Health
MoH	Ministry of Health
MOHFW	Ministry of Health and Family Welfare
MOHSW	Ministry of Health and Social Welfare
MoU	Memorandum of Understanding
MSD	Medical Stores Department
NICHD	<i>Eunice Kennedy Shriver</i> National Institute of Child Health and Human Development
NGO	Nongovernmental Organization
NRP	Neonatal Resuscitation Program
PAHO	Pan American Health Organization
RACHA	Reproductive and Child Health Alliance
SADC	Southern African Development Community
S&T	Survive and Thrive
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Contents

Abbreviations.....	6
Executive Summary.....	8 - 13
Introduction	14
Methodology.....	15
Background	16
1. Newborn Resuscitation Skills	16
2. Newborn Resuscitation Devices.....	18
3. Convergence of Interests:	
The Roots of the HBB Global Development Alliance.....	19
HBB Global Development Alliance:	
A Public-Private Partnership Model for Global Health	20
1. Establishment of the GDA	20
2. Vision, Goal, Objectives, and Principles.....	20
3. Role of the GDA Partners	22
Implementation	24
1. Global Context	24
a. Evidence and Policy	24
b. Resuscitation Equipment	24
c. Purpose-Driven Innovation.....	24
2. Country Context.....	26
a. Advocacy and Adoption of HBB.....	26
b. HBB as a Vertical or Integrated Program	27
c. Quality Improvement	29
d. Data Recording and Reporting.....	32
e. Adaptation of HBB Training Materials.....	32
f. Resuscitation Equipment	34
g. Institutionalization and Sustainability.....	36
h. Strengths and Challenges of Country Implementation	39
Results	41
1. Inputs and Outputs.....	42
2. Outcomes	44
3. Impact	50
Awards	52
Lessons Learned	53
Future Directions	56
Appendix: Country Case Studies	59 - 115

Executive Summary

The Helping Babies Breathe (HBB) Global Development Alliance (GDA) was established with the goal of achieving a significant reduction in neonatal morbidity and mortality through strengthening the performance of providers who prevent and manage newborn asphyxia in low-resource settings. GDAs are public-private partnerships that seek to identify and capitalize on common or complementary interests among partners who work together to improve social and economic conditions in less-developed countries. The HBB GDA was founded in 2010 by its five core member organizations: the American Academy of Pediatrics (AAP), the United States Agency for International Development (USAID), Laerdal Global Health, Save the Children, and the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD).

The formal establishment of the HBB GDA provided partners with a platform for working together and allowed them to define relationships and construct a common agenda. The HBB GDA developed a Memorandum of Understanding (MoU) that outlined key policies and procedures, objectives, and principles to guide its actions. The partners agreed on five objectives: (1) encourage attention to increased international, regional, and national commitment and resources for newborn resuscitation as a part of Essential Newborn Care (ENC); (2) improve the availability of high-quality, appropriate and affordable resuscitation devices and training materials; (3) improve the resuscitation capabilities of birth attendants with emphasis on skilled birth attendants; (4) strengthen the supply chain logistics system for resuscitation devices; and (5) evaluate the impact of resuscitation programs at scale. The partners agreed to abide by five principles that were at the core of the GDA: (1) inclusiveness and collaboration; (2) country-owned and country-led; (3) integration within a broader package of ENC; (4) shared goal, results, and recognition; and (5) brand non-exclusivity.

In this document, we chronicle the implementation of HBB from its inception as a concept to subsequent global rollout. The objectives of the document are to describe how a public-private partnership sought to address the problem of high newborn mortality due to birth asphyxia and to detail the strengths and challenges that were encountered during implementation as countries introduced HBB across the globe.

Achievements

The HBB GDA has demonstrated that the GDA model can be a highly effective strategy for health development at global and country levels.

Global: Between June 2010 and December 2014, the HBB GDA mobilized multiple organizations to contribute monetary and non-monetary resources valued at about \$58 million (USAID \$21 million; Partners

Indian mother with her newborn baby



\$37 million). Through their global and national program platforms, networks, and partnerships, the GDA raised global awareness about asphyxia-related newborn mortality and the feasibility of tackling this major cause of newborn death and disability with a simple and demystified educational program. This work sparked the development of simpler, more user-friendly and effective innovative technologies that were integrated in education programs across the world. It influenced the update of evidence-based global policy recommendations, created awareness about the lack of appropriate indicators for tracking progress and outcomes of resuscitation interventions both at global and country level, and increased the global supply of resuscitation equipment.



Country: The global partnership was mirrored at the country level where multiple partners came together to introduce and roll out HBB. Between June 2010 and December 2014, the GDA introduced HBB in 77 countries; at least 52 of these introductions were led and coordinated by national governments. Many of these countries were galvanized to change national plans, policies, and guidelines; incorporate resuscitation data into existing or newly created registers; support programs to increase the number of trained providers; and equip health facilities with resuscitation devices. Program reports from several countries indicate a high rate of successful resuscitation, ranging from 79 percent to 89 percent, among babies who do not breathe at birth. Seven countries (Bangladesh, Cambodia, Colombia, Ethiopia, Malawi, Tanzania, and Uganda) have now begun to implement HBB in over 40 percent of health facilities where births take place. Facility readiness was relatively high in Bangladesh, Cambodia, Ethiopia, Malawi, Tanzania, and Uganda where survey and program data were available; across these countries, 53 percent to 88 percent of facilities were equipped with resuscitation devices, and 44 percent to 75 percent of health providers were trained in neonatal resuscitation. However, access to resuscitation continued to be hampered by low coverage of facility births.

The impact study of HBB conducted among 80,000 births over two years in Tanzania reported a significant reduction of early newborn mortality (within the first day of life) by 47 percent and fresh stillbirth by 24 percent.¹

Lessons learned

The HBB GDA demonstrated that global public-private partnership was an effective strategy for rapid rollout of a health intervention. The partnership leveraged and relied on each partner's assets, cash and in-kind contributions, shared knowledge, influence, networks, and program platforms. The partnership also facilitated coordination and harmonization of training methods and program approaches; and it lowered the cost of products such as medical devices and training materials. The GDA influenced global policy on interventions, shaped the global market for products, stimulated the development of innovations and educational materials, and was a powerful force for advocacy through the widespread reach of its partners' influence and networks.

In the absence of a blueprint for scaling up resuscitation, one of the most important lessons learned by the GDA partners is that achieving impact requires more than training providers and distributing equipment. The evidence at hand suggests that, for HBB, the answer lies in an approach to implementation that is tailored to the local context, looks beyond training and provision of equipment to other system components, and is carefully implemented, monitored and evaluated. The simplified HBB training methodology leads to significant improvements in knowledge and skills of birth attendants in simulation exercises but this does not necessarily translate into improvements in clinical performance. Promising approaches to address this problem that are being introduced by many countries include low-dose, high frequency practice drills, mentoring, and quality improvement processes integrated with monitoring and supervision systems.

HBB is recommended as an approach to address birth asphyxia for babies born in health facilities but has limited reach in countries where a significant proportion of babies are born at home. Referral to a higher level facility is often not a viable option for birth asphyxia; the resuscitation action must be immediate or within a few minutes of birth if the baby is to survive without life-long complications. Thus, coverage of newborn resuscitation continues to be very low in settings where it is hampered by low coverage of facility births. Given this, a clearer articulation of implementing the initial action steps (drying, additional stimulation, and airway clearing) as an effective resuscitation intervention that can be accomplished by community health workers and family members in home births might be a possible interim strategy in settings where the coverage of facility births is very low even as countries are building and expanding the capacity of facility delivery.

Birth asphyxia and other intrapartum complications are often the result of suboptimal management of labor and delivery. Neonatal resuscitative care must be integrated within stronger maternal and newborn health systems that provide effective obstetric care. Implementation and evaluation of HBB and essential newborn care provided evidence that up to a quarter of stillbirths can be averted by training providers how to correctly classify stillbirths and that many non-breathing babies who are misclassified as stillborn can be resuscitated successfully if action is taken immediately.



Nigerian midwives practicing simulation based HBB scenarios

Systems Approach

HBB brings two people together – the newborn and the clinician – in a dramatic moment of life and death when much depends on the clinician's ability to perform as s/he was trained. But the clinician's performance depends on a ripple of systems that support the clinician in ever-widening circles that begin at the facility level and expand outward to the district and national level health systems.

While HBB can garner dramatic short-term results, long-term sustained impact is only possible if interventions are part of a holistic systems approach.

Sustaining impact requires government leadership and ownership of the program; institutionalization within national plans, budgets, and health systems; and public awareness. Equally important is the establishment of partnerships in countries that build on national technical working groups or steering groups and nurture national champions to demonstrate their leadership in support of the national programs. Health professional associations play an important role in almost all countries as influential and respected champions, advocates, mentors, and trainers of the HBB program.

NEWBORNS: OUR FUTURE

In 2013

- 139 million babies were born
- 10 million babies needed help to breathe with simple drying and rubbing for stimulation
- 6 million babies needed help to breathe with a bag and mask for ventilation
- 1 million babies needed help to breathe with advanced resuscitation
- 2.8 million babies died within the first month of life
- 2.6 million babies were stillborn
- 660,000 newborns died from intrapartum-related complications including asphyxia

Action

- We will prevent a third to one-half of intrapartum-related deaths with effective resuscitation
- We will prevent a quarter of stillbirths with effective resuscitation

By 2030

- We will help to end preventable newborn deaths by achieving a target of 12 newborn deaths per 1,000 live births (Every Newborn Action Plan)

Future Directions

The HBB GDA has advanced the cause of newborn health and laid the foundation for a significant reduction in asphyxia-related newborn morbidity and mortality in the future. The GDA has guided HBB through a successful initial period during which HBB has been widely adopted. Moving forward, the partners have already taken steps towards the second phase of partnership, drawing on important lessons learned, to work more strategically and deliberately towards improved quality of care, sustainability and national impact.

Broadening the scope: The HBB GDA has broadened the scope of its mandate beyond newborn resuscitation by merging with the broader and newly established Survive and Thrive GDA towards vigorous support on integrated newborn, child and maternal interventions in partnership with pediatricians, midwives, and obstetricians. To address additional causes of newborn death, the Survive and Thrive partners are developing a suite of educational modules in the same style as the proven HBB program, Helping Babies Survive, with the objective of tackling all major causes of newborn death - asphyxia, infections and preterm/low-birth weight complications. A separate suite of modules on Helping Mothers Survive is also under development.

Strengthening systems and quality improvement processes: Under the umbrella of the Survive and Thrive GDA, HBB efforts will shift from rapid rollout in new countries to a greater emphasis on deepening and expanding support in countries where HBB has already been introduced with the objective of achieving high quality care, sustainability, and impact. The GDA has begun to focus on strengthening health systems, including commodity-related issues, data recording and reporting, and quality improvement processes to improve and sustain provider skills which will be an integral component of the Helping Babies Survive program.

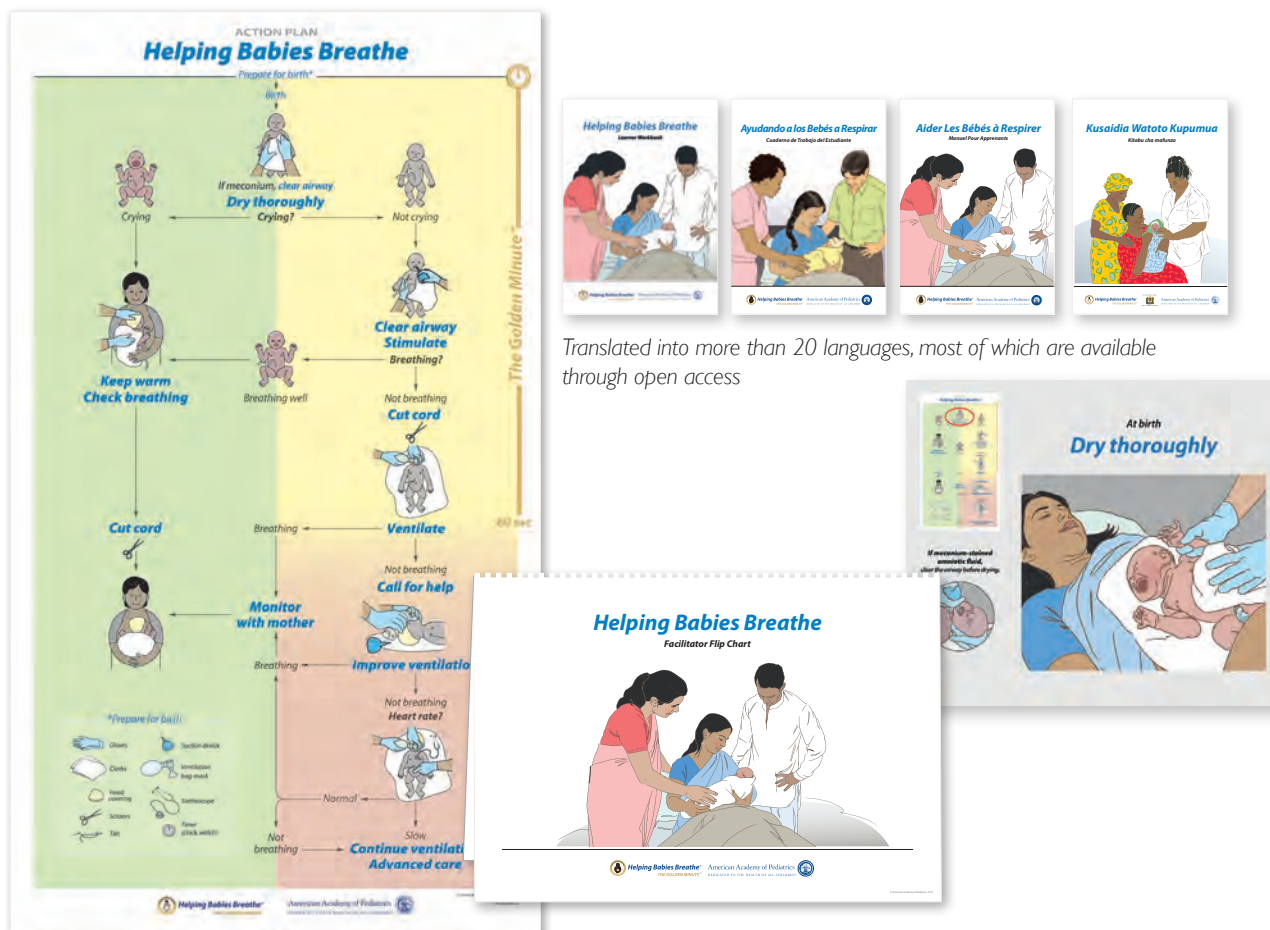
Reaching every newborn: Since the HBB strategy is focused on health facilities, the potential for HBB to achieve impact is limited in countries where rates of facility birth are low. Partners will need to increase public awareness and develop and test alternative strategies to efficiently reach newborns who suffer from birth asphyxia but are born at home and in community settings. These may include alternative formulations of HBB (e.g., immediate drying, additional stimulation, and airway clearing) for community-level providers in supervised home births.

The body of global experience suggests that the HBB initiative will require additional years of intensive support if it is to achieve the impact envisioned by the founders of the Alliance. Given the investments that members of the Alliance have made in HBB, the passion and dedication that they still have for their effort, and the plight of millions of newborns that struggle to breathe at birth, it would be a missed opportunity of the highest order to fail to further strengthen the global HBB effort.

INTRODUCTION

Hampered by many challenges, including the unavailability of simple training methodologies, low-cost resuscitation equipment, and low skilled-birth attendance, newborn resuscitation has achieved very low coverage in developing countries. In 2009, Wall et al. analyzed available data in National Service Provision Assessments in six African countries and found that only 2-12 percent of health providers conducting birth in health facilities were trained in neonatal resuscitation and just 8-22 percent of facilities had neonatal resuscitation equipment; the researchers concluded that, since only about half of births were in facilities, only one-eighth of babies who required resuscitation had access to this intervention in the six countries.² The paper called for a major increase in coverage by seizing the missed opportunity for the provision of basic resuscitation in facility settings and to seek a solution for babies born at home.

The immediate opportunity was to scale up basic newborn resuscitation (drying and rubbing for tactile stimulation, clearing the airway, and bag and mask ventilation) in health facilities since advanced resuscitation (chest compression, drugs, and intubation) is not required by the majority of newborns. Efforts by the American Academy of Pediatrics (AAP) and other partners to respond to this global need culminated in the development of the Helping Babies Breathe (HBB) curriculum. Supported by a public-private Global Development Alliance (GDA) that prioritized HBB, a promising, evidence-based, basic newborn resuscitation program spread rapidly across the globe.



Methodology

This document is based on multiple sources of information including program reports, special assessments, published literature, project evaluations and interviews. Key documents that were reviewed include the process documentations of the HBB GDA and the HBB rollout in Bangladesh and Malawi, as well as independent evaluation studies of HBB implementation conducted in Bangladesh and Malawi. Interviews with partners of the Alliance and with program implementers at the country level provided much of the qualitative information that rounded out the evaluation studies. While HBB has been introduced in 77 countries since the establishment of the GDA, this paper selected a subset of 12 countries based on the scale of the program, the availability of more indepth information, and government leadership and ownership of the program that is moving the HBB program on the pathway to sustainability and impact. These program experiences were written as country case studies by key country-based program implementers who coordinated the documentation of the case studies on behalf of the country stakeholders. These country case studies are in the Appendix.

This document chronicles the implementation of HBB from its inception as a concept to subsequent global rollout. The objectives of the document are to describe the response of a public-private partnership to close the global gap for newborn resuscitation, and the strengths and challenges of implementation as the partnership introduced the intervention in 77 countries within four and a half years (June 2010 - December 2014).



BACKGROUND

1. Newborn Resuscitation Skills

The Neonatal Resuscitation Program (NRP), developed by AAP and the American Heart Association in 1987, is the global standard of care for newborn resuscitation. However, NRP is intended for advanced facilities and settings and targeted to health care workers who provide care to newborns in well-equipped, fully-staffed hospitals during delivery. As a result, newborn resuscitation has historically been at a low prevalence in low-resource settings where governments and their development partners have searched for a strategy to reduce newborn mortality due to birth asphyxia.

In 2004, the Latter-day Saint Charities (LDSC) and the Global Network for Women and Children's Health Research supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development's (NICHD) received permission from the AAP to develop a simplified version of neonatal resuscitation education. LDSC used their version to teach basic newborn resuscitation to health providers in low-resource settings. The Global Network used their version in "First Breath," the first randomized trial of resuscitation training and essential newborn care in six countries.

In 2006, AAP convened a team of experts that included a representative from LDSC to develop educational materials for newborn resuscitation that were appropriate for low-resource settings. The Laerdal Foundation supported their work and provided technical expertise in health communication to contribute to the development of the educational materials. The materials emphasized simple, direct explanations using pictorial images and colors of traffic lights to facilitate comprehension by new learners with limited ability to read technical guidelines. The Golden Minute® concept was also introduced in the materials to convey the time within which breathing should occur. The technical content of HBB was based on consensus guidelines of the International Liaison Committee on Resuscitation (ILCOR) and was also informed by the multi-country "First Breath" study.³

HBB thus emerged from the same science as NRP to fill a global gap for materials to teach newborn resuscitation to health providers in low-resource settings. HBB is not a replacement for NRP—indeed, the two sets of materials are based on the same evidence and are designed to be complementary and to be implemented at different levels of the health system. HBB and NRP essentially teach an identical approach to assessing the newborn and taking appropriate action for 99 percent of newborns who have trouble breathing at birth. The two approaches differ only in that NRP offers detailed guidance for how to manage the one percent of asphyxiated newborns who do not respond to basic resuscitation and require more advanced care, whereas HBB instructs providers to refer those cases and only provides guidance regarding how to manage the referral.



HBB inspires confidence and increases competence for health workers to help babies breathe.

2. Newborn Resuscitation Devices

At USAID's request, PATH conducted a global landscape analysis to understand availability and accessibility of neonatal resuscitators in the global market. The original premise was that the high cost of bag-and-mask newborn resuscitator devices was resulting in a lack of availability and accessibility of resuscitators in the public sector in developing countries. To confirm this, PATH performed a global landscape analysis of resuscitation devices to inventory neonatal resuscitators in the market. The landscape analysis confirmed that, while more than 100 companies were producing and/or distributing neonatal resuscitators in high- and middle-income countries, few were priced within the budgets of low-resource countries. The landscape analysis identified two additional challenges: many of the resuscitation devices were of low quality and most were not appropriately designed for low-resource countries.

In 2005, PATH conducted a bench and user assessment of the performance and functionality, safety during use and reuse, ease of assembly and disassembly, and construction of many resuscitation devices. Particular attention was given to reusable, silicone bag-and-mask devices costing less than US\$30 each. Results of the evaluations were compiled in a field guide which was distributed widely via implementing-partner organizations and through the PATH website.⁴ An additional evaluation of various resuscitation devices used by health providers in South Africa resulted in a region-specific version of the field guide.⁵ PATH also conducted a web-based survey of neonatal experts to determine practices and preferences related to neonatal resuscitators in developing countries. Following the global landscape analysis, PATH led a more in-depth assessment of the market dynamics present in two regions of sub-Saharan Africa in order to learn more about available devices, pricing, suppliers, and procurement mechanisms for these devices, and to estimate their market size in the public sector.

Results from these studies demonstrated that there was a strong need for high-quality and affordable, reusable neonatal resuscitation devices in Southern African Development Community (SADC) and Economic Community of West African States (ECOWAS) countries. Distribution channels were not well established and varied across the region. The United Nations Children's Fund (UNICEF) was identified as playing a critical role in the supply of medical devices to SADC countries. However, many manufacturers distributed their products to end users primarily using their own distributors. There were no consistent purchasing standards across the region as a whole. In the Republic of South Africa, devices that were no longer recommended for use were still being used at some facilities. PATH studied the causes of the unavailability of reasonably-priced resuscitation equipment in countries around the world and found that many potential clients preferred the Laerdal resuscitation products but that distributors were attempting to sell them at large profit margins, thus making them inaccessible to many potential clients. The PATH study also identified barriers to purchase that were related to shipping or customs and found that there were producers of acceptable quality resuscitation equipment in China and India, but that they were not able to easily distribute their products to countries in Africa.⁶

PATH concluded that pursuing local manufacturing of neonatal resuscitator devices would not be the most efficient way to increase availability. Because there are already a number of manufacturers of neonatal resuscitation devices, the study found that it would be more cost and time efficient to work with existing manufacturers rather than investing in the development of local production capacity.

3. Convergence of Interests: The Roots of the HBB Global Development Alliance

By 2010, having completed a four-year process of developing the HBB educational materials, AAP found itself faced with the challenge of how to roll out HBB globally. At the same time, USAID was struggling to find a strategy to support the rollout of newborn resuscitation at scale in an overarching context of limited funding for newborn health from bilateral donors, governments, and the private sector. Save the Children was also in search of an approach to address birth asphyxia. NICHD had provided evidence that informed the development of HBB and was interested in pursuing further research opportunities that would contribute to the evolution of effective interventions to address asphyxia-related newborn mortality. LDSC was eager to see their early work on developing and implementing a training package for newborn resuscitation in low-resource settings taken forward. The Laerdal Foundation supported the development of HBB and designed innovative low-cost devices such as a simulation mannequin for training, and was willing to make their neonatal resuscitation equipment available on a not-for-profit basis and to invest in the development of a distribution system to make them readily available globally. Johnson & Johnson had collaborated with AAP to support the rollout of newborn resuscitation in China and was eager to replicate their positive experience by supporting other countries.

Thus, there was an unrealized convergence of interests between multiple organizations yet none of them had grasped the potential forces that could be unleashed through collective action.



HBB was listed as one of ten breakthrough innovations for recommended further scale up in a PATH report presented by Ban Ki-Moon to the UN General Assembly in September 2013.

HBB GLOBAL DEVELOPMENT ALLIANCE: A Public-Private Partnership Model for Global Health

1. Establishment of the GDA

USAID uses the term Global Development Alliance (GDA) to describe a public-private partnership model that seeks to identify and capitalize on common or complementary interests among partners that work together to improve social and economic conditions in less-developed countries. The driving rationale for working through GDAs is that the public and private sectors, working in tandem, can accomplish goals that neither sector could achieve on its own. In partnering with the private sector, the GDA model emphasizes synergies of interest and builds on the complementary strengths of each partner while putting systems in place to mitigate conflicts of interest. Criteria for GDAs include the following: at least 1:1 leverage (cash and in-kind) of USAID resources; common goals defined jointly by all partners; jointly defined solution to a social or economic development problem; non-traditional resource partners (companies, foundations, universities, professional associations, etc.); shared resources; risks and results and innovative; and sustainable approaches to development.

Recognizing the potential power of public-private partnership among diverse organizations with complementary skills and assets and spurred by funding constraints for newborn health, USAID invited five founding members - AAP, Save the Children (SC), Laerdal Global Health (LGH), and the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) - to jointly establish a GDA to roll out the HBB intervention. Subsequently, the Alliance added several new members including Johnson & Johnson (J&J), Latter-day Saint Charities (LDSC), Catholic Medical Missions, Earth Institute/Columbia University, Project CURE and the International Pediatric Association.

Key to the process of establishing a GDA is building consensus among the partners on the vision, goal, global reach, objectives, time frame, strategies, partner roles, and guidelines for communication, all of which are articulated in the Memorandum of Understanding (MoU) that was agreed to and signed by member organizations. Thus, the HBB GDA harnessed the contributions of and facilitated coordination among disparate partners, cemented by a formal MoU.

2. Vision, Goal, Objectives, and Principles

The HBB GDA partners shared a common vision and intention to work toward the goal of a significant reduction in neonatal mortality as well as short and long term morbidities through the management of newborn asphyxia during and immediately following birth. From its very inception, the partners envisioned the HBB curriculum as an integrated part of essential newborn care (ENC) and, where relevant, they intended to strive to form linkages with quality delivery care and maternal health programs.



Studies show that HBB implementation has reduced early neonatal mortality by 47 % in Tanzania, where HBB has been a national program since 2009.

The partners agreed on five objectives: (1) encourage attention to increased international, regional, and national commitment and resources for newborn resuscitation as a part of ENC; (2) improve the availability of high-quality, appropriate and affordable resuscitation devices and training materials; (3) improve the resuscitation capabilities of birth attendants with emphasis on skilled birth attendants; (4) strengthen the supply chain logistics system for resuscitation devices; and (5) evaluate the impact of resuscitation programs at scale.

The partners agreed to abide by five principles that were at the core of the GDA: (1) inclusiveness and collaboration; (2) country-owned and country-led; (3) integration within a broader package of ENC; (4) shared goal, results, and recognition; and (5) brand non-exclusivity.

3. Role of the GDA Partners

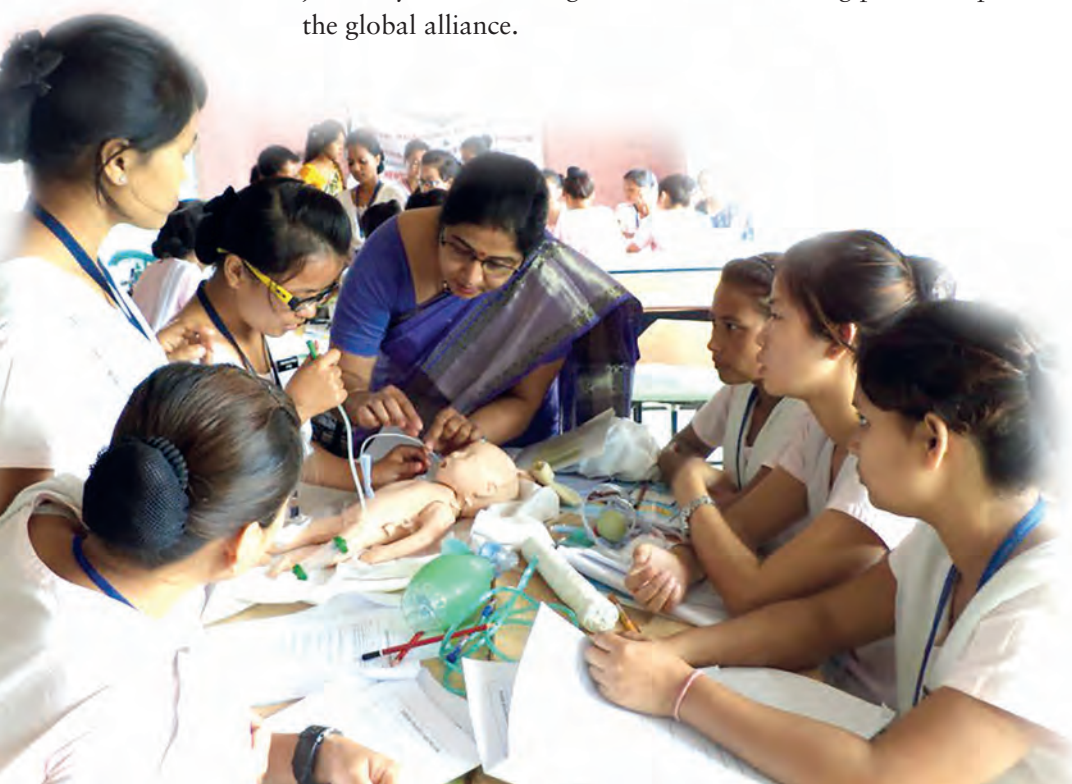
The strategy of shared value is closely aligned with the rationale for the establishment of GDAs, which seeks to leverage business interests to achieve social goals. The strategy of shared value is dependent on leveraging the power of market-based competition to address social problems, and here the match with the HBB GDA is somewhat atypical, as the two private partners – Laerdal and Johnson & Johnson – have both joined the alliance because of corporate social responsibility and a commitment to save lives rather than to profit from the sale of their products. The dedication of Laerdal to constantly strive to improve the quality of its resuscitation equipment, invest in purpose-driven appropriate innovations, lower its cost as much as possible, and develop supply chain logistics systems to deliver the equipment quickly and inexpensively has been vital to the ability of the HBB GDA to do as much as it has with limited resources. Johnson & Johnson has contributed resources to scale up newborn resuscitation in China, India, Uganda, and Malawi, and has been a strong supporter of midwifery capacity building. Both Laerdal and Johnson & Johnson have shown that private businesses can play an invaluable role in global health development and have modeled the potential of the principle of shared value.

AAP has demonstrated the important role that health professional associations can play in dramatically expanding access to complex and under-utilized clinical interventions at lower levels of the health system in low-resource settings. By developing a simplified and demystified approach to providing newborn resuscitation through its HBB educational package and making it freely available to developing countries, the AAP provided a game-changing approach to address a complex clinical intervention. AAP reached out to its collegial pediatric organizations in countries across the world to exchange ideas and secure their support for the HBB initiative. A small group of dedicated pediatricians and neonatologists have built the HBB strategy into more than was ever envisioned. They expanded the pool of volunteer neonatologists, extended their partnership to midwives and obstetricians and modeled the role that health professional associations can play in global health.

The partner nongovernmental organizations (NGOs) have played a catalytic role in introducing HBB in many countries. The Latter-day Saint Charities is especially note-

worthy for the generosity of the organization and commitment of its volunteers who resuscitated newborns in 50 countries. They focus on procurement of large supplies of resuscitation equipment and training health providers in partnership with local NGOs. Their coordination with USAID's implementing partners in Cambodia, Colombia and the Dominican Republic illustrates how effective such a partnership can be in rolling out HBB nationally. Save the Children was also another notable partner that supported the introduction and expansion of HBB in several countries, including Bangladesh and Malawi, through its catalytic influence with national newborn technical working groups and champions. Other partners, such as Project CURE (Commission on Urgent Relief and Equipment), Catholic Medical Mission Board (CMMB), and the Reproductive and Child Health Alliance (RACHA) have played an important role at the country level.

The HBB GDA could not have happened without USAID's drive to initiate and nurture the partnership. USAID's maternal and newborn health (MNH) program in multiple countries provided the HBB GDA with a global platform for rapidly introducing and rolling out HBB. It was largely this program platform that enabled the GDA to reach out to governments to integrate HBB into national programs. UNICEF, while not a GDA partner, provided a strong program platform to support the Governments of Ethiopia and Bangladesh. USAID's assets included its network of implementing partners – organizations that received funds from USAID to support the implementation of HBB and to provide other specialized services through projects. These included: (1) the global Maternal and Child Health Integrated Program (MCHIP) followed by the Maternal and Child Survival Program (MCSP) in which Save the Children was the key newborn health partner, (2) HealthTech (PATH) that focused on assessments and development of tools for commodity procurement and logistics, (3) Health Care Improvement followed by ASSIST (University Research Corporation) that integrated quality improvement in country programs, and (4) the CORE Group that supported the development of the HBB implementation guide and dissemination of information among its network of NGO members. Most of these organizations supported program activities at the country level where they were joined by additional organizations thus forming partnerships that mirrored the global alliance.



In India, a country-owned and integrated HBB version is rolling out throughout the country.

IMPLEMENTATION

1. Global Context

The introduction of HBB in 2010 began as a global initiative with the establishment of the global development alliance. It occurred at a time when there was a nascent but growing global urgency to focus on newborn health programs and the 2009 Call to Action to reduce intrapartum deaths including those due to birth asphyxia.⁷

a. Evidence and Policy

At the time, the only available global guideline on newborn resuscitation was over a decade old.⁸ Recognizing this global gap, the World Health Organization (WHO) conducted a systematic review of new evidence, building on the International Liaison Committee on Resuscitation (ILCOR)⁹ evidence-based guidelines on neonatal resuscitation, and published new clinical guidelines in 2012.¹⁰ In 2013, the publication of studies in Tanzania¹¹ and India¹² that demonstrated the positive impact of HBB in lowering early neonatal mortality and stillbirth rates further spurred the global introduction. Members of AAP who are representatives of ILCOR were invited to join WHO expert groups that developed the global resuscitation recommendations, thus ensuring that the HBB curriculum was aligned with the global recommendations. In 2011, the HBB curriculum was included among recommended training curricula identified by WHO, the Aga Khan University, and the Partnership for Maternal, Newborn, and Child Health.¹³ While the GDA was established well before the global Every Newborn Action Plan (ENAP) was developed, the work of the GDA was fully aligned with the vision and objectives of the ENAP and many of the GDA partners directly contributed to the ENAP.

b. Resuscitation Equipment

Alliance partners are also actively engaged in the UN Commission on Life-Saving Commodities for Women and Children and advocated for and provided technical support to include resuscitation equipment in the WHO and Interagency List of Essential Medical Devices. To aid in the national-level estimation of devices needed for scale-up, PATH developed a Quantification Tool for Neonatal Resuscitation Devices and a Neonatal Resuscitation Devices Procurement Toolkit in addition to technical assistance to Malawi, Tanzania, and Uganda.¹⁴ It was found that, despite training in disassembly and disinfection of resuscitators, there was a gap in knowledge and skills in reprocessing of the equipment among both trained and untrained personnel. In response, PATH is developing reprocessing guidelines.

c. Purpose-Driven Innovation

A hallmark of the HBB educational program is the use of low-cost, purpose-driven innovations that are integrated in the educational and quality improvement HBB program. Laerdal Global Health continuously looked for ways to improve, simplify and innovate the educational and life-saving technologies that they made available to



A happy Cambodian mother and her healthy newborn.

the program. The mannequin enabled the program to simulate resuscitation in training as well as in low-dose, high-frequency practice drills; the transparent mucous extractor suction bulb that was designed to open at the top allowed for easy cleaning and sterilization; and the bag and mask was designed with fewer pieces allowing for easier assembling. The latest “Upright Resuscitator” is expected to enhance the existing technology that was designed by Laerdal Medical a generation ago. In a study conducted by PATH and Seattle Children’s Hospital, the performance and acceptability of the Upright Resuscitator suggested that the device may be suitable for effective ventilation for infrequent users in low-resource settings. It also has fewer parts and will cost less than the current standard resuscitator. The upright resuscitator is now CE marked and in the market, and will soon be tested by Save the Children and PATH with users in Uttar Pradesh, India.¹⁵



HBB training with the new Upright Bag-Mask Resuscitator

2. Country Context

a. Advocacy and Adoption of HBB

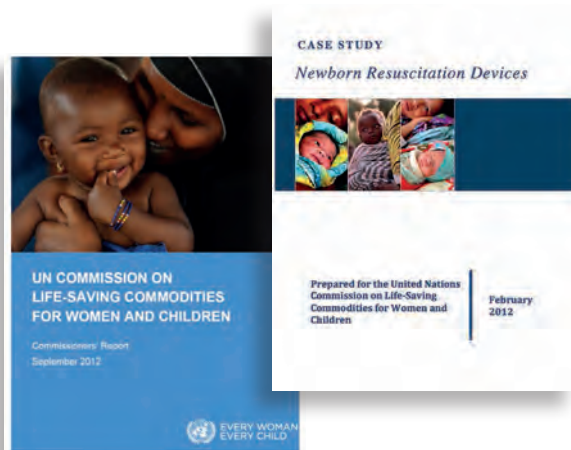
The Alliance strongly encouraged all partner organizations to respect the principle of country-led and country-owned leadership, seek the guidance and coordination of ministries of health (MoHs), and involve host-country stakeholders in all HBB activities. The GDA intended the resuscitation program to be embedded within the national newborn health plan that was developed and owned by the participating national government and to play a supportive role to countries that requested assistance to introduce and expand newborn resuscitation. It was clear that the principle of “country-owned” meant that the HBB GDA and its partners should work through - and in support of - the MoHs. Experiences in applying this principle varied across countries it was found that some organizations did at times support the introduction of HBB in certain countries without coordinating or consulting with the MoH at the national level. However, the GDA fostered a culture of working through, and with, the ministry rather than independently and partners’ coordination with ministries improved over time.

Most countries had been implementing the Neonatal Resuscitation Program (NRP), a program that was designed by AAP for a more advanced hospital care setting. Effective advocacy by partners based on the hands-on, competency based, and empowering training methodology and evidence-based training content resulted in widespread preference for HBB in countries. The first step often involved a GDA partner engaging in a dialogue with the MoH advocating for newborn health and for addressing birth asphyxia to reduce newborn mortality. Working through its network of partners and hand-in-hand with governments, the HBB GDA identified the key opinion leaders and policy makers in each country and developed a tailored approach to encourage exposure to HBB among key stakeholders. Many of these local champions, often from the MoH and professional societies, were sponsored by development partners to attend regional or international training of trainers. This was often followed by a stakeholder meeting at the national level to engage all stakeholders and begin the dialogue of whether and how to test, adapt and move forward with HBB.

Once governments and stakeholders in countries made a decision to introduce HBB in their national newborn programs; partners provided support to the HBB program in multiple ways including reviewing and updating the national newborn implementation plan; adapting and integrating HBB into existing maternal newborn and child health (MNCH) training materials; training master trainers and health providers; conducting periodic supportive supervision in health facilities; facilitating the procurement of resuscitation equipment for health facilities; supporting evaluation, and funding the rollout of the program.

b. HBB as a Vertical or Integrated Program

The HBB GDA principle pertaining to integration “The Alliance intends that resuscitation become integrated within a broader package of essential newborn care including early and exclusive breastfeeding, thermal protection, clean cord care, and early identification and management of infections and low birth weight” clearly demonstrated the intent of the Alliance in this regard. HBB was never meant to be introduced as a standalone intervention; the intent was always for it to be integrated into existing programming. HBB can be introduced into a new country in many ways, from a purely vertical two-day training program to a module within a three-week integrated training that spans the MNCH continuum.



A UN Commission report in 2012 included newborn resuscitators, suction devices and training simulators among priority Essential Lifesaving Commodities for Scale Up.

Country case studies below show that, in most situations, ministries integrated HBB with ENC packages; others integrated it within their Basic Emergency Obstetric and Newborn Care (BEmONC) and Integrated Management of Newborn and Childhood Illness (IMNCI) programs.

Country Case Study Profiles: Advocacy and Adoption of HBB

In **Bangladesh**, a leading medical teaching hospital, Bangabandhu Sheikh Mujib Medical University, was supported by USAID and Save the Children to conduct a pilot study of HBB. Results of the study were disseminated at a stakeholder meeting where the Minister of Health declared that HBB would be a national priority. This catalyzed the development of a national plan for HBB in 2010. A group of development partners worked with the government to develop a detailed scale-up plan to rollout HBB in all districts. In 2011, the Government of Bangladesh incorporated HBB into policy, strategic and planning documents. In **Cambodia**, RACHA, a local NGO supported by LDSC, demonstrated the effectiveness and feasibility of HBB through a pilot study. With the support of multiple partners, including WHO, the government rolled out a nationwide cascade training that integrated HBB training and coaching with immediate newborn care and emergency obstetric and newborn care (EmONC). The **Dominican Republic** illustrated the catalytic role of the Latin American and Caribbean Neonatal Alliance. Following a regional training workshop, MCHIP, LDSC and the national pediatric association supported 10 high-volume hospitals across the country to serve as centers of excellence and focal points of introduction and expansion of HBB. They promoted the combination of HBB and NRP since the nurses in the hospitals were very empowered with HBB. As the ministry continually decentralizes its services at the local level, the demand for the HBB program continually increases. In **Tanzania**, HBB was initiated by GDA members before the official launch of the GDA partnership. In 2009, at a stakeholder meeting, the Ministry of Health and Social Welfare, led by the President, decided to roll out HBB nationally with an emphasis on operations research in the initial demonstration phase supported by AAP and Laerdal. The impressive 47 percent decline in newborn mortality provided an impetus for the inclusion of HBB in the National Reproductive, Maternal, Newborn, and Child Health (RMNCH) strategy as a high priority intervention. In **Ghana**, an initial period of uncoordinated and fragmented efforts by multiple partners who introduced diverse resuscitation practices and curricula has recently been replaced by purposeful and strategic planning by the government. With the support of PATH and Children's Investment Fund Foundation (CIFF) and other partners, the government has developed a national HBB rollout strategy. The **Malawi** MoH endorsed HBB in March 2011 with a clear consensus on national scale-up. It incorporated HBB into the Reproductive Health Strategy, Road Map for Accelerating the Reduction of Maternal and Neonatal Morbidity and Mortality, Integrated Maternal and Newborn Health training manual and the Obstetric Protocols. The **Ugandan** MoH endorsed HBB in 2012. HBB was included in key policy documents and guidelines including: the Health Sector Strategic Plan, Child Survival Strategy, RMNCH sharpened plan – A Promise Renewed, quality improvement guidelines, Health Information Management System and the Indicator Manual for Newborn quality of care, and commodity quantification guidelines based on a tool developed with PATH's support under the UN Commission for Life-Saving Commodities program.

Country Case Study Profiles: Vertical versus Integration

In **Tanzania**, the government made a strategic decision to facilitate rapid rollout of HBB through a vertical program with the intent to integrate it subsequently within the EmONC program. In **Ethiopia**, the Ethiopian Pediatric Society and UNICEF played a pivotal role in supporting the Federal Ministry of Health (FMOH) to develop and implement the ENC-HBB training manual, as well as to support the integration of HBB into BEmONC and IMNCI training. In **Ghana**, the activities of multiple partners included HBB in vertical in-service training; it was also included in the pre-service midwifery education, integrated Life Saving Skills, EmONC, and in targeted MNH skills improvement programs. In **Kenya**, the government decided to integrate HBB in existing ENC guidelines, training manuals and service protocols; MCHIP supported the government to update the National Guidelines on ENC and facilitated updates on the new guidelines for national and provincial IMNCI/newborn focal persons. The National Newborn Steering Committee in **Uganda** defined a package called “Helping Babies Breathe-Plus/Uganda” which includes HBB, ENC, extra-care for low birth weight/preterm babies and management of newborn infections.

c. Quality Improvement

Newborn resuscitation is a clinical procedure that requires regular practice to maintain skills and provider competence. The GDA partners found that retention of resuscitation skills among trained health providers was particularly challenging. Some countries realized the importance of introducing refresher training and certification to enhance trained professional skills at regular interval. Some began to develop and integrate mechanisms of mentoring, monitoring and supportive supervision to support providers in program implementation. This effort to strengthen quality improvement processes and integrate HBB within the broader health systems is at a nascent stage of program rollout and will need to receive continued attention if the HBB program is to achieve and sustain impact.

The evaluation of the HBB programs in Bangladesh, Malawi and Tanzania revealed identical implementation challenges: trained birth attendants lost their skills a few months after the training unless the program included a system of ongoing support through mentoring and coaching and ongoing practice sessions. A study in a rural

The first twin, Gloria came out without a problem. But it took a long time for twin number two, Gladys, to be born. She looked blue and lifeless when she finally arrived. After a few minutes with bag-mask, Gladys started to cry. Today both twins are doing well and mother Eliminiata loves her two daughters.



hospital in Tanzania showed that trained providers performed significantly better in simulated neonatal care and resuscitation seven months after HBB training but that this improvement did not transfer into clinical practice.¹⁶ Concerned with this finding, the team in the Tanzanian hospital conducted another study to determine the effectiveness of the “low-dose, high-frequency simulation training” approach. In a subsequent study of 8,000 newborns in the Tanzanian hospital, the research team found that weekly brief simulation training by midwives improved management of newborn resuscitations in the delivery room and reduced early neonatal mortality by 40 percent.¹⁷ This approach had also been evaluated and found to be effective in

Country Case Study Profiles: Quality Improvement

The **Afghanistan** program established front-line quality improvement teams to change the quality of care processes in the health facility by defining and continuously measuring simple quality measures of resuscitation, identifying challenges, and implementing innovative solutions. In **Bangladesh**, pilot efforts are currently underway to integrate HBB into MOHFW monitoring and supervision systems. New supervision checklists have been introduced for program managers and master trainers. Regular drills in monthly meetings have also been introduced as a low-dose, high-frequency training approach. In **Tanzania**, the government has introduced low-dose, high frequency practice sessions, on-the-job coaching, practice guides, and supportive supervision about four to six weeks after the initial training. Simulation mannequins have been provided in each health facility for on-the-job practice before each shift. A policy guideline is under development to support continuous professional education and a national clinical mentoring system. In **Ghana**, partners are supporting the government to incorporate a new low-dose, high-frequency approach in the integrated MNH training, encouraging weekly practice sessions supported by monthly visits by clinical mentors. In **India**, a key component of the Belgaum study was quality improvement; the most effective quality improvement activities were establishment of HBB corners for daily drills, observations of the deliveries by the facility coordinators and quality improvement managers, resuscitation debriefings and audits, and feedback and recommendations to improve the skills. These activities improved the skills and confidence of the birth attendants. MCHIP's technical support in three states of India prioritized facilities for corrective actions, coached supportive supervision and mentoring, conducted training in HBB quality improvement approaches, established skills laboratories in facilities, and strengthened the recording and reporting of facility data, and post-discharge follow-up. **Malawi** followed the existing supervision structures for MNH at district, zonal and national levels. Trained HBB providers are expected to orient those not trained and facilitate periodic low-dose, high-frequency practice sessions through the Continuous Professional Development program with support from district based trainers and mentors. Malawi also utilizes the Performance and Quality Improvement (PQI) Model which uses a set of standards to assess quality of Reproductive Health Services. Following the introduction of HBB, Performance and Quality Improvement Reproductive Health standards were revised and included the HBB approach. **Uganda's** HBBPlus program includes supportive supervision and regular coaching and follow-up of health workers two weeks after training. Newborn service standards were included in the quality improvement collaborative activities. A supervision and health facility assessment tool and an indicator manual for newborn quality of care were developed; a mentoring process has been recommended by the national authorities. The government plans to integrate newborn quality improvement in a National Quality Improvement Plan.



HBB master trainer in a bunker in Kabul for rural community midwifery teachers in Afghanistan.

improving cardiopulmonary resuscitation (CPR) skills retention among health providers in the US.¹⁸ These findings have helped some countries to develop mechanisms to strengthen their quality improvement system. Many countries have integrated the “low-dose, high-frequency” approach combined with mentoring and coaching to buttress cascade training, and a few have introduced collaborative quality improvement teams.

d. Data Recording and Reporting

In the absence of a global indicator on newborn resuscitation coverage, countries generally do not track or report on resuscitation data in their national Health Management Information System (HMIS). In a review of MNH indicators collected through national HMIS, USAID’s MCSP found that only three (Tanzania, Mozambique and Rwanda) out of 13 countries recorded resuscitation data in their facility register; of these, only one (Tanzania) reported it in the monthly summary form.¹⁹ As countries rolled out HBB, some governments have introduced pilot systems to track the progress of their HBB program. In most countries, however, partners have developed their own project tracking systems resulting in ad hoc and uncoordinated mechanisms for data recording and reporting.

e. Adaptation of HBB Training Materials

Country adaptation of the HBB materials included translation and revisions to integrate the curriculum within existing ENC, EmONC, IMNCI or other training

Country Case Study Profiles: Data Recording and Reporting

In **Bangladesh**, the government is currently field-testing resuscitation indicators in the newly developed Mother and Newborn Care Register with the intent to integrate it within the national HMIS. In addition, the HBB program managers have developed a Newborn Care Surveillance System to monitor the HBB program in a subset of health facilities. **Tanzania** has introduced resuscitation indicators in the daily registers, tally sheets and monthly summaries at the health-facility level. Aggregate data are sent to the district level as part of the District Health Information System (DHIS). Through advocacy from MCHIP and other partners in **Ethiopia**, a select number of key newborn care indicators were added to the HMIS through the National Child Survival Technical Working Group. In addition, the Ethiopian Pediatric Society has developed a register that contains indicators such as “number of babies requiring resuscitation,” “number of resuscitated babies that survived” and “number of resuscitated babies that died after resuscitation.” In **Ghana**, the government has identified a subset of newborn health indicators from the National Newborn Health Strategy and is pilot-testing their integration in the DHIS. In the interim, partners have kept parallel labor registers to track HBB indicators. **Malawi** introduced indicators on resuscitation in the HMIS – DHIS II. HBB registers have been distributed to all facilities providing labor and delivery services. The HBB reporting form is sent to the district for entry into DHIS II every month which can be accessed at district, zonal and national levels.



Ritka Begum gave birth in Sadipur, Bangladesh. The baby girl was not breathing on delivery, but luckily, Sakhina, her Skilled Birth Attendant, had attended a Helping Babies Breathe course only two weeks earlier. Thanks to this training and available resuscitation equipment, Tayiaba survived and is thriving.

programs; changes in the images appropriate for the local setting; and minor modifications to align with national guidelines on newborn care. This was almost always done with the guidance, involvement, and the required approval of AAP in order to ensure that the scientific integrity of the curriculum was maintained. Other global partners, such as MCHIP and LDSC, supported countries with the adaptation process when requested; this included facilitation of the approval process, translation, providing the images so that they could be easily replaced by countries, and production of some of the translated versions by Laerdal.

f. Resuscitation Equipment

While the GDA made significant efforts to make high-quality, affordable resuscitation equipment available, countries encountered several barriers including the cost of equipment and the arduous procurement process of identifying three sources and quotations as required by many governments. Procurement of large quantities through the MOHs for national rollout occurred primarily through the UNICEF Supply Division and through donor financial support including some from HBB implementing partners. Most countries preferred to procure the Laerdal brand of mannequins and resuscitators. With the exception of government procurements through the UNICEF system, most partners placed small orders of 50-100 units using the online form and ordered directly from Laerdal for training purposes. Although Laerdal provides equipment at cost to all Millennium Development Goal

Country Case Study Profiles: Adaptation of Materials

In **Bangladesh**, adaptations included translation into Bengali, the addition of new content on ENC, instructions on how to clean the resuscitation equipment, and modification of cord cutting in accordance with Bangladesh's guidelines and local practice. The HBB Action Plan chart was modified to instruct the health provider to refer the newborn for more advanced care after 10 minutes of unsuccessful ventilation with a bag and mask. In **Cambodia**, the materials were translated into Khmer and integrated with Immediate Newborn Care and EmONC training and coaching packages. In **Colombia**, the HBB educational materials and implementation guide were translated into Spanish and the images were adapted to the various ethnic groups of the region. In **Tanzania**, the materials were translated into Swahili, the images were revised to resemble Africans, and the materials were edited to improve trainer instructions in administering the Objective Structured Clinical Examination. In **Ethiopia**, the government adapted the materials to integrate HBB within existing in-service training and supportive supervision as well as other training programs (ENC, IMNCI, BEmONC, and Integrated Community Case Management) with an emphasis on hands-on practice using a mannequin to improve resuscitation skills. In **Kenya**, the updated Facilitator and Participant ENCTraining Manuals included HBB images, language and content and other updated newborn health evidence-based components. In **Uganda**, the HBB curriculum was broadened to include other topics of ENC and came to be known as HBB-Plus. In **India**, the Navjat Shishu Suraksha Karyakram (NSSK) program - a combination of resuscitation and ENC - was developed at the same time as the HBB program and was rolled out nationally before HBB was officially released. With MCHIP's support, the NSSK and HBB materials were blended and rolled out in three states of India.



HBB team training Ethiopia

Country Case Study Profiles: Resuscitation Equipment

Purchase of equipment was almost always supported by donors and other external development partners. Most countries have procured NeoNatalie mannequin kits from Laerdal Medical. In **India**, the Indian Academy of Pediatrics has procured these directly from Laerdal and distributed them among the trainees and to state governments. Health providers also purchased Indian brands. In **Bangladesh**, the Laerdal mannequin and other resuscitation devices are procured by Save the Children using funds provided by USAID and UNICEF. Save the Children procured these devices in sufficient quantities to equip all government facilities from tertiary to union level, including community skilled birth attendants, up to 2016. The government paid the customs duties and USAID supported the government to strengthen its logistics management information system for resuscitation equipment through the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Project. In **Cambodia**, development partners purchased NeoNatalie and HBB training kits and distributed them to all provincial health departments and operational districts, EmONC sites, maternity wards, regional training centers and implementing partners. In **Colombia**, the government and the professional neonatal association, ASCON, procure materials from Laerdal and also receive donations from LDSC. In **Tanzania**, equipment is procured by either the government (with support from ClIFF) through the Medical Stores Department or through UNICEF and WHO. The commodities have been distributed to almost 4,000 public sector and faith-based health facilities that conduct deliveries (about 74% of hospitals and 64% of health centers). In **Ethiopia**, the FMOH is supported by UNICEF for the procurement and distribution of equipment through the Pharmaceutical Fund and Supply Agency. All newborn resuscitation equipment is imported and the Laerdal brand is uniformly used in the country. In **Kenya**, non-trained custodial staff or students were frequently responsible for cleaning and disinfecting equipment incorrectly resulting in damage and discoloration of the devices. A stakeholder consultative meeting was held in **Uganda** to review and pre-test a quantification tool with support from PATH international under the UN Commission for Life Saving Commodities. A national quantification of resuscitation equipment was conducted and information was forwarded by the MoH to the World Bank to improve procurement. The MoH has procured some resuscitation equipment through its World Bank project; however, the bulk of the Laerdal equipment has been donated by partners.

countries, freight and customs costs were initially shockingly high. Several importation shipments experienced delays in customs clearance for an average of two to four weeks for preventable reasons. Shipments were all consigned to in-country entities with the majority consigned to local NGOs and the MoH. Despite brand non-exclusivity being one of the GDA principles, no other equipment manufacturers have produced high-quality equipment at a cost comparable to Laerdal's nor have they demonstrated such an investment in low-resource settings

A UNICEF report noted that it supplied 55 countries with resuscitation equipment (bag and mask) during 2011 and 2013; Tanzania and Ethiopia were the two largest receiving countries.²⁰ The cost of the Laerdal bag-mask resuscitator was significantly lower (\$15) compared to the average cost of other brands of equal quality (\$60) in all three years since the Laerdal brand was sold at cost. The report also noted that the HBB training program introduced in 2010 contributed substantially to the increase in sales, accounting for 50 percent of the volume; sales spiked significantly from a little over 5,000 units in 2009 to 30,000 units in 2011. In addition to the UNICEF report, the Laerdal Global Health sales reports also indicate an increase in the global supply of resuscitation equipment.

g. Institutionalization and Sustainability

To move towards sustainability, the HBB program must be fully owned and led by the government and all donor and development partner support should be guided and coordinated by the government. There should be a clear articulation and dissemination of national and subnational policy, strategic plans, and clinical guidelines on HBB; the national health management information system should be able to capture relevant data on resuscitation and the data should be used to guide program management; equipment to resuscitate newborns should be available in all delivery wards; procurement and logistics systems should be functional; and funds need to be allocated in the national and/or subnational budgets to support HBB training and service delivery. These concepts of government ownership and leadership, integration of HBB within existing newborn and - where relevant - maternal health programs, and broader systems approach, are fundamental principles that grew in importance as governments and GDA partners gained more experience in HBB implementation.

HBB was introduced in most countries as a training-focused intervention but, as the program expanded nationally, many countries began to strengthen relevant parts of the health system to support the rollout of HBB. Systems strengthening received more support in countries where the MoH treated newborn resuscitation as a national priority program. In countries where HBB is at scale, implementation is largely government-led and coordinated but continues to be donor-dependent. As described below, all case study countries in this document are well on the pathway to national institutionalization and sustainability but will require more time and investments to establish functional systems to fully support and sustain the program.



In 2014, midwife Himalala managed to resuscitate baby Agnes when she was not breathing at birth. "I learned the skills for resuscitation after doing training. This has helped me a lot in my work" says Himalala

Country Case Study Profiles: Institutionalization and Sustainability

The HBB program in **Bangladesh** is led by the government providing guidance to development partners and directives to the district level. The Government has the leadership role in designing and implementing the HBB scale-up. However, funding support has been donor-dependent with partial cost-sharing by the Government. The Government covered the cost of VAT and tax for all imported resuscitation equipment and contributed to the training and meeting venue and supervision support while USAID and UNICEF covered all other program costs; additional support was provided by the Laerdal Foundation for evaluation and subsidized resuscitation equipment. The Government has not yet integrated routine funding for HBB into the national budget. A number of actions have been taken to institutionalize HBB in the national health system: HBB has been adopted as official MOHFW policy and has (or will be) included in all relevant policy and strategic documents. In addition, HBB has been integrated into pre-service education program for all health providers and incorporated into the new Comprehensive Newborn Care package and maternity care program. Also, a newly developed Mother and Newborn Care Register has been field tested. Pilot efforts are currently underway to integrate HBB into the MOHFW monitoring and supervision systems and the government has introduced Logistics Monitoring Information System with USAID's support. Government-led efforts such as these to embed HBB within national systems contribute to the long-term sustainability of HBB.

In **Cambodia**, HBB training has been integrated into the National Safe Motherhood Protocols for Referral Hospitals and Health Centers; it is a component of the "key intervention" workshops. Indicators on stillbirths, newborn referral, and non-breathing babies at birth were included in the national Cambodia Health Information System. In addition, HBB has been integrated within the regular Midwifery Coordination Alliance Team meetings. When HBB was integrated in the Immediate Newborn Care package, coaching on the package was scaled up in all provinces of Cambodia. RACHA, in collaboration with WHO, has provided technical support and equipment (mannequins, suction bulbs, bag and masks) to the national Maternal and Child Health Center to strengthen immediate newborn care practices (including HBB) through the nationwide rollout of the program.

The HBB program in **Colombia** is led and owned by the government and supported by professional associations, donors, and other partners. In the initial start-up phase of the HBB program, MCHIP and the Pan American Health Organization (PAHO) provided financial, technical, and human resources. Today, Colombia's government, with the support of ASCON and LDSC, coordinates and guides the national implementation of HBB. The government has a national budget to carry out the training courses and to purchase equipment. Several HBB champions have emerged and play an important role in scaling up HBB; these include the board members of ASCON, PAHO, and government technical staff many of whom are university professors and have included HBB in the pre-service curricula.

HBB is a national program led by the Government of **Tanzania**. The national HBB steering committee is chaired by a senior government official who provides oversight of the national rollout of HBB. Due to decentralization in Tanzania, funding for rolling out HBB and other newborn health interventions is not at the national level but is rather the responsibility of the councils, where newborn health is a priority. Ownership of the HBB program has been decentralized at the level of regions and councils due to a systematic advocacy effort at the national level. HBB has been institutionalized in national health systems: the Medical Stores Department (MSD) has been sensitized to procure and distribute newborn resuscitation equipment and to include newborn-sized bag and mask specifications

in the National MSD price list catalogue. With the support of the UN Commission for Life-Saving Commodities, the government and partners are leading a quantification exercise to ensure the availability of these devices. National clinical mentoring is a priority quality improvement approach for the government; clinical mentoring for HBB is included among the priority interventions in the RMNCH Strategic Plan. HBB is integrated in the pre-service program for nurse tutors and in continuous professional development programs. Data quality accuracy and completeness is a challenge; the MoH is working on a policy change to include HBB in the national health management information system. As a key newborn stakeholder, the Pediatric Association of Tanzania is updating the national pediatric treatment guidelines including those for newborn resuscitation. Long-term sustainability of the program will be achieved by integrating HBB within the ENC and EmONC programs.

b. Strengths and Challenges of Country Implementation

The key strength of the HBB program in countries where it is being implemented at scale is the commitment, ownership, and leadership of governments; active advocacy and implementation support of national champions and pediatric professional associations; and the technical and financial support of multiple international development partners. This is clearly demonstrated in Bangladesh and Tanzania where strong political commitment at the highest level of the government was demonstrated from the very inception of the program and where the national HBB rollout began with a clear call to action by the leadership in government.

The GDA struggled with many challenges even as it succeeded in rapidly rolling out HBB globally. Government and donor funds for newborn health were very limited. The lack of a global indicator on resuscitation and a global tracking system to monitor coverage of resuscitation was a major barrier to the GDA's ability to track global coverage of resuscitation and availability of resuscitation equipment. While early field trials of HBB had shown that community health workers and traditional birth attendants could be taught to resuscitate newborns successfully using the HBB materials, the GDA is consistent with WHO's recommendation of training only skilled birth attendants. Thus, large numbers of newborns who were born at home did not have access



Drying and stimulating the baby is an essential life-saving skill. Photo from Peru

to this intervention. Retention of resuscitation skills among trained health providers was particularly challenging, especially in peripheral-level health facilities where the number of deliveries is low and opportunities for practicing resuscitation is limited. Other challenges were not unique to HBB implementation; they were part of broader systemic weakness that affected most health programs in low resource settings. These included: (1) inadequate financing, staff shortages and high rates of turnover of trainers and mentors at health facilities which continually posed challenges for ongoing HBB supervision, mentorship and support; (2) slow penetration of HBB into pre-service training; (3) inconsistent in-service HBB implementation; and (4) procurement and logistical challenges and high tariffs/duty on imported HBB supplies and equipment.

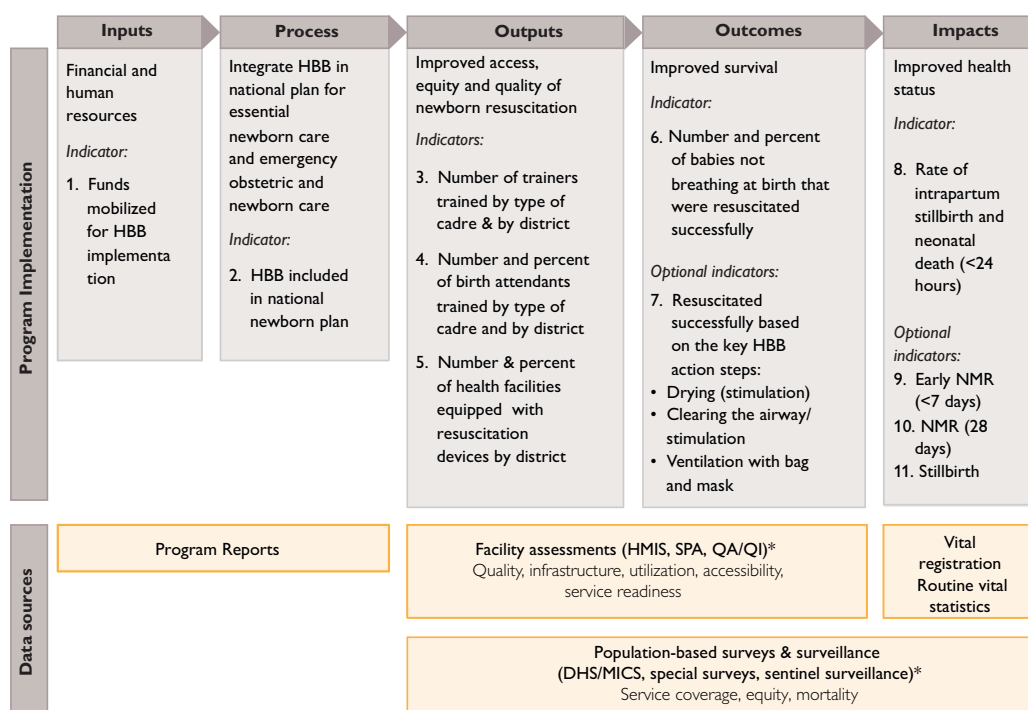


HBB master level training in Lahore, Pakistan

RESULTS

The GDA developed a logic model to guide program monitoring (Figure 1). The GDA tracked the global progress of newborn resuscitation through multiple mechanisms which included process documentation, evaluation, and semi-annual reports from partners. ^{21, 22, 23, 24, 25, 26}

Figure 1: Helping Babies Breathe Logic Model



* HMIS: Health Management Information System; SPA: Service Provision Assessment; QA/QI: Quality Assurance/Quality Improvement; DHS: Demographic Health Surveys; MICS: Multiple Indicator Cluster Surveys.

1. Inputs and Outputs

During 2010-2014, the GDA leveraged an estimated \$58 million from all partners. This included a contribution of about \$21 million by USAID and about \$37 million in cash and kind by partners (and the time contributed by volunteers from the AAP and LDSC) for program activities, development of educational materials, and evaluation. USAID's criteria for GDAs include at least 1:1 leverage (cash and in-kind) of USAID resources. Through the HBB GDA, USAID leveraged twice that amount; for every dollar USAID invested, partners invested two dollars.



During this period, partners trained and equipped almost 300,000 health workers to resuscitate newborns in 77 countries, of which 52 were coordinated by national governments. Seven countries (Bangladesh, Cambodia, Colombia, Ethiopia, Malawi, Tanzania, and Uganda) have scaled up HBB in over 40 percent of health facilities where births take place. Many countries that have not yet scaled up HBB have integrated it in national newborn plans, guidelines, or clinical protocols.

The map below shows the countries that have introduced HBB; the countries in green are those where governments are leading or coordinating HBB programs with partners (Figure 2).

Figure 2: HBB implementation map

Colours indicate the status of Helping Babies Breathe (HBB):

- HBB introduced and implementation efforts coordinated by the government
- HBB introduced
- MDG 4 focus country, HBB yet to be introduced

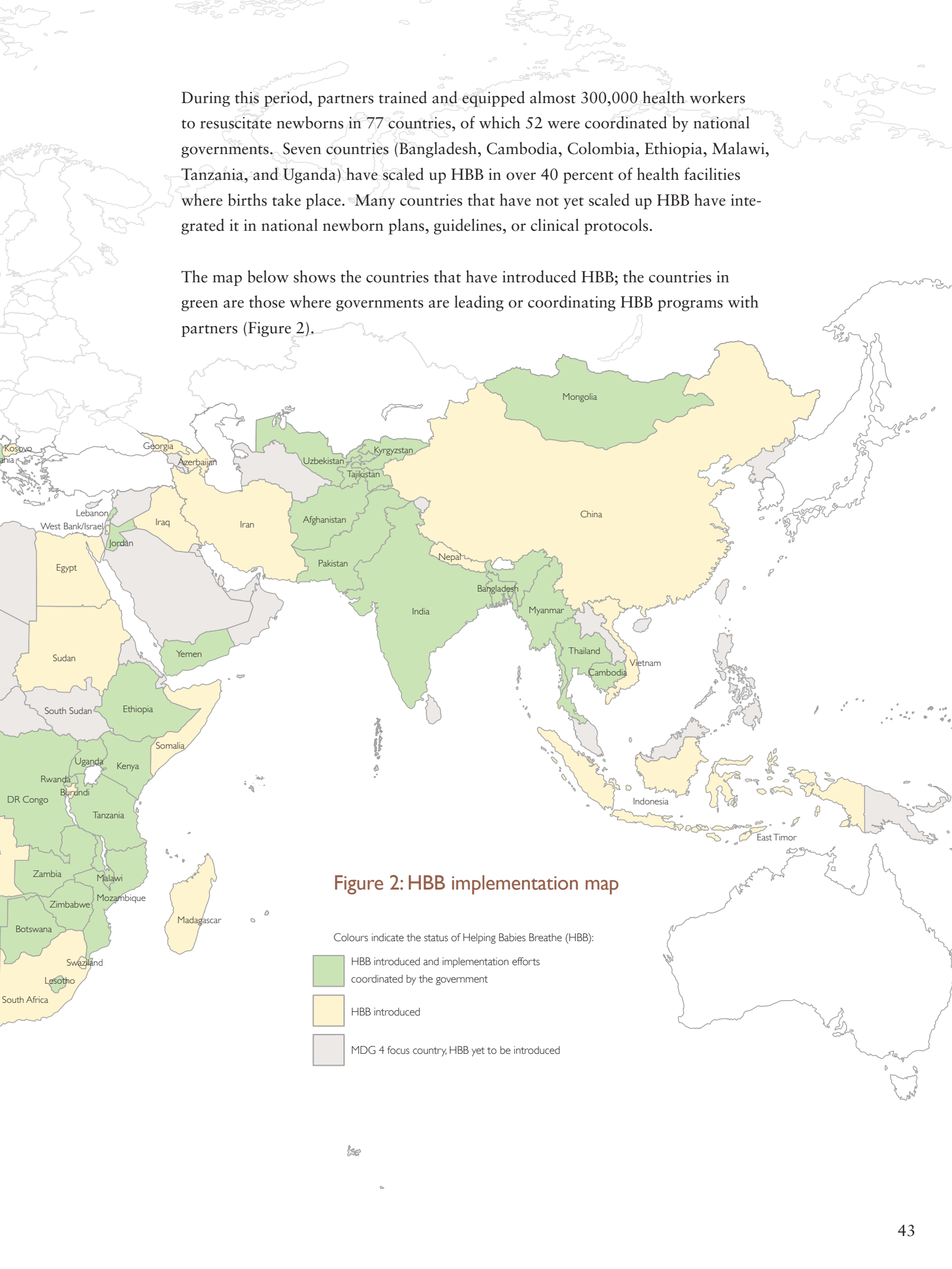
During this period, partners trained and equipped almost 300,000 health workers to resuscitate newborns in 77 countries, of which 52 were coordinated by national governments. Seven countries (Bangladesh, Cambodia, Colombia, Ethiopia, Malawi, Tanzania, and Uganda) have scaled up HBB in over 40 percent of health facilities where births take place. Many countries that have not yet scaled up HBB have integrated it in national newborn plans, guidelines, or clinical protocols.

The map below shows the countries that have introduced HBB; the countries in green are those where governments are leading or coordinating HBB programs with partners (Figure 2).

Figure 2: HBB implementation map

Colours indicate the status of Helping Babies Breathe (HBB):

- HBB introduced and implementation efforts coordinated by the government
- HBB introduced
- MDG 4 focus country, HBB yet to be introduced



2. Outcomes

In this section, we have looked at access to resuscitation and rate of successful resuscitation among babies who are not breathing as two outcome indicators.

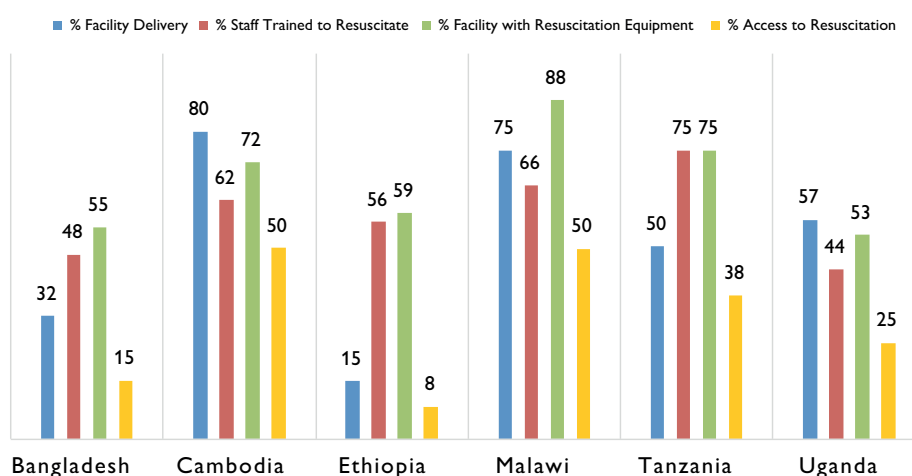
Access to Resuscitation

HBB was offered in over 40 percent of health facilities in seven countries – Bangladesh, Cambodia, Colombia, Ethiopia, Malawi, Tanzania, and Uganda. To estimate access to resuscitation, we looked at the readiness of facilities (availability of newborn resuscitation equipment and staff trained in newborn resuscitation) based on the Service Provision Assessment in Malawi (excluding training data) and Bangladesh, Service Availability and Readiness Assessment in Uganda and program reports from Ethiopia, Cambodia, Malawi (training data), and Tanzania. We then adjusted the lower value (staff trained) with the percentage of facility delivery to estimate access to resuscitation (Figure 3).



Hand washing practice in India

Figure 3: Facility Readiness and Access to Resuscitation (2013-2014)



Note on Access to Resuscitation: Staff trained adjusted for coverage of babies born in health facilities.
Bangladesh Service Provision Assessment Survey 2015. National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International.
Malawi Service Provision Assessment Survey 2013-2014. Malawi Ministry of Health and ICF International.
Training data is based on MOH HBB program report.
Cambodia, Ethiopia, and Tanzania data are based on 2015 HBB program reports from the respective Ministries of Health

The Bangladesh 2015 Service Provision Assessment shows that 48 percent health providers were trained in resuscitation and 55 percent of health facilities (not including community clinics) were equipped with resuscitation devices.²⁷ This has resulted in 15 percent access to newborn resuscitation primarily in the public sector.

Cambodia program reports estimate that 62 percent of providers have been trained in the Immediate Newborn Care and HBB program and that 72 percent of hospitals and health centers have been equipped with resuscitation devices, thus providing resuscitation access to 50 percent of newborns.

In Colombia (data not shown in graph), the advanced NRP is available in all higher level facilities; by implementing HBB in 78 percent of the country targeting vulnerable populations in hard to reach areas, the country expanded access to resuscitation among the under-served populations.

The Government of Ethiopia has trained 56 percent of health providers and equipped 59 percent of health facilities; however, access is limited to 8 percent since coverage of institutional delivery is just 15 percent according to the Mini Demographic Health Survey, 2015.²⁸ If one considers the higher coverage of skilled birth attendance (41%) reported in the government's 2014 Annual Performance Report, access to newborn resuscitation would be estimated at 23 percent.²⁹

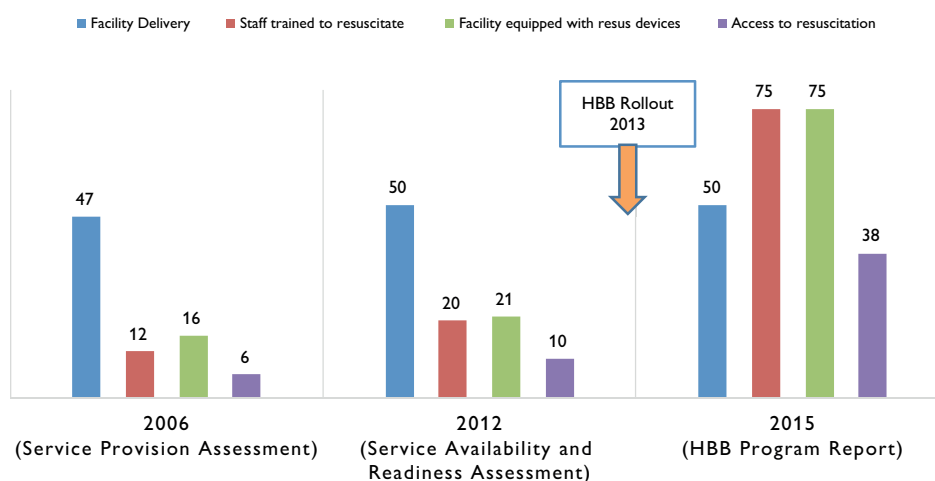
In Malawi, the 2013-14 Service Provision Assessment survey indicates that 88 percent of facilities are equipped with resuscitation devices; with the support of partners, the MoH has trained 66 percent of skilled birth attendants in resuscitation; since institutional delivery is at 75 percent in Malawi, we estimate that about 50 percent of newborns have access to newborn resuscitation.³⁰

Tanzania reports a dramatic increase in facility readiness; 75 percent of health facilities that conduct deliveries are equipped with resuscitation equipment and staffed with health providers trained to resuscitate newborns. Since coverage of facility-births is 50 percent, we estimate that about 38 percent of newborns have access to resuscitation in Tanzania. This is a significant increase compared to the findings of the Service Availability and Readiness Assessment of 2012 and the Service Provision Assessment of 2006 which had found very low facility readiness and access to resuscitation. Even though coverage of facility-delivery hovered at 50 percent since 2006, access to resuscitation increased significantly after 2013 when HBB was introduced in the country (Figure 4).^{31, 32}

In Uganda, the 2013 Service Availability and Readiness Assessment survey indicates that 44 percent of the health providers are trained in resuscitation and 53 percent of facilities are equipped with appropriate devices, providing access to resuscitation to an estimated 25 percent of newborns. This indicates a small increase in facility readiness and access compared to the findings of the 2007 Service Provision Assessment (37% staff trained, 45% facilities equipped, and 15% access to resuscitation) as shown in Figure 5.^{33, 34}

In summary, seven countries – Bangladesh, Cambodia, Colombia, Ethiopia, Malawi, Tanzania, and Uganda, have now begun to implement HBB in over 40 percent of health facilities where births take place. Facility readiness was relatively high in Bangladesh, Cambodia, Ethiopia, Malawi, Tanzania, and Uganda where survey and program data were available; across these countries, 53 to 88 percent of facilities were equipped with resuscitation devices, and 44 to 75 percent of health providers were trained in neonatal resuscitation. However, access to resuscitation continued to be hampered by low coverage of facility births, ranging from 8 to 50 percent.

Figure 4. Facility Readiness and Access to Newborn Resuscitation in Tanzania

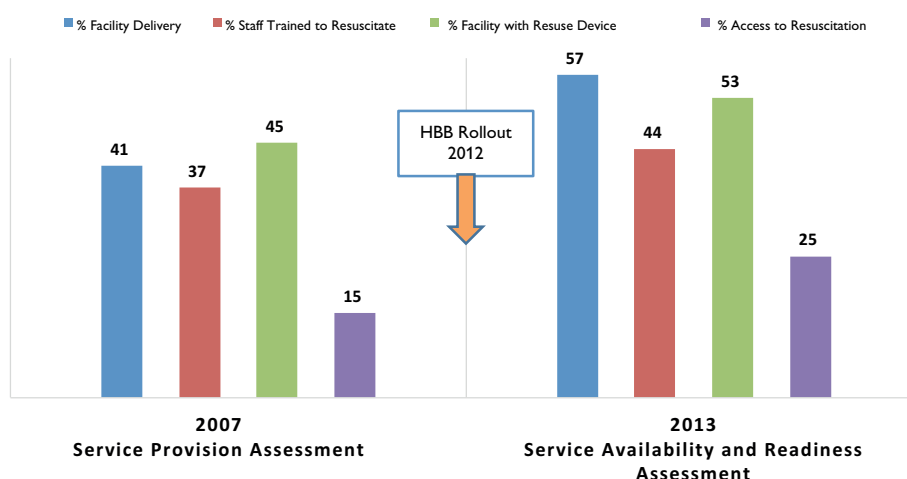


Sources:

Tanzania Service Provision Assessments, 2006. National Bureau of Statistics, Ministry of Health and Social Welfare, & Macro International Tanzania Service Availability and Service Assessment, 2012. Ministry of Health and Social Welfare.

Program Data compiled by Jhpiego for the Ministry of Health and Social Welfare, Tanzania, 2015

Figure 5. Facility Readiness And Access To Newborn Resuscitation In Uganda



Sources:

Service Provision Assessments for Uganda, 2007. Ministry of Health, Uganda, and Macro International Inc., Calverton, Maryland, USA

Service Availability and Service Assessment for Uganda, 2013. Ministry of Health, Uganda



This little baby was born covered in meconium and needed help to breathe. Marta, a HBB master trainer in Zambia, dried, stimulated and suctioned this baby, who survived and is now sleeping happily in Marta's arms.

Successful Resuscitation

A key outcome indicator that the GDA partners tracked in some countries was the number and percentage of babies not breathing at birth who were resuscitated successfully. Program reports from these countries indicate a high degree of successful resuscitation by trained health providers.

In Bangladesh, iccd,r,b conducted an independent evaluation of the HBB program during its first two years of introduction and expansion. The study observed 7,138 deliveries in intervention and comparison areas at baseline and follow-up visits and interviewed 221 health providers, most of whom were nurses and midwives. The study found evidence of increased coverage of newborn resuscitation practices in facilities where providers conducting deliveries had received the HBB training. Both the practice of suctioning and stimulation had increased steadily from baseline to follow-up in the intervention facilities among newborns who did not cry at birth and who were not delivered by C-section. There was an increase in the comparison arm too, but it was not consistent across the three follow-up periods. Use of bag and mask among babies who did not cry at birth decreased from baseline to follow-up in both intervention and comparison facilities; overall decline in the use of bag and mask in the intervention arm may indicate more effective use of the initial steps of HBB (drying/stimulation and clearing the airway) resulting in a decline in irrational or over-use of ventilation with a bag and mask.

There was also some evidence of improved quality of newborn resuscitation (i.e. interventions done in correct sequence), but the effect was not very strong or consistent - at follow-up, among newborns who did not breathe at birth who were treated by providers trained in HBB, only 6.3 percent of newborns received asphyxia management in the correct sequence (suctioning and/or stimulation and/or use of bag-mask) within 60 seconds of birth. Providers in high-volume facilities performed better than their colleagues in low-volume facilities that manage fewer deliveries. HBB-trained providers performed better compared to non-trained providers, and they showed better performance in the normal vaginal deliveries than in C-section deliveries. On the other hand, there was no such improvement among community skilled birth attendants. The evaluators concluded that the small observed changes observed during the first two years of the HBB initiative in terms of newborn resuscitation practices appear to be insignificant and that training community skilled birth attendants in resuscitation will not enable Bangladesh to reach the millions of births that occur at home.³⁵

In addition to the evaluation study in Bangladesh, MCHIP also established a surveillance system in 91 service delivery sites in nine districts to monitor the HBB program. The system enabled the HBB management team to track 17,316 births. Of the 1,060 babies (6%) who did not breathe at birth, 835 (79%) were successfully resuscitated (of these, 63% began breathing through the initial steps of drying, stimulation, and/or clearing the airway with a mucous extraction suction bulb and an additional 37% needed ventilation with a bag and mask). Sixteen babies (1%) died and 209 (20%) were referred for advanced care.³⁶

The Ethiopian Pediatric Society developed a register to track newborn outcome indicators. In 2013, the data showed that, out of 43,393 births in 116 health facilities, a total 2,090 asphyxiated babies were successfully resuscitated by health workers who had received training with support from MCHIP. An evaluation conducted by MCHIP in its program area in four major regions of the country indicate an improvement in the resuscitation skills of general practitioners, nurses, midwives and health officers. An assessment of 60 health facilities in one month with 8,080 deliveries reported that, out of the 212 babies not breathing at birth, 180 (85%) survived after resuscitation and that there were 453 (6%) stillbirths.

Service statistics from the MCHIP-supported areas in three states of India (Jharkhand, Uttar Pradesh, and Haryana) show encouraging results. Over a million live births were recorded in the maternity registers during 2012-2014. Of these, about 105,000 (9%) babies were unable to breathe. The program successfully resuscitated 84 percent of babies with the HBB action steps, i.e., by performing the initial steps of drying, stimulation, and clearing the airway and, if needed, ventilation with a bag and mask. This includes resuscitation of 14 percent of live newborns that were misclassified as stillbirth. An additional 10 percent of babies needed oxygen for a total of 94 percent.

According to the findings of the process evaluation to assess the quality of care and coverage of the HBB newborn resuscitation intervention at the facility level in Malawi, there was an overall improvement in health worker training, knowledge, equipment availability, and management of labor and delivery including newborn care over the two rounds of data collection in Malawi. Districts were grouped into one of three dose groups - high, medium and low dose (nine districts each) - based on a score created by combining responses for 16 items related to health provider training, practice, supervision, and availability of equipment and supplies for newborn care at facility level. There were generally no significant differences between the high, medium and low dose groups in either of the two rounds or between intervention and control groups. There was no difference in actual performance of managing newborns that did not breathe at birth between rounds of data collection. The findings of no difference between intervention and non-intervention groups and between dose groups are not surprising given the nationwide scope and short duration of exposure that resulted in logistical and managerial challenges to ensure adequate supply of required equipment, guidelines and appropriately trained staff in the facilities.³⁷

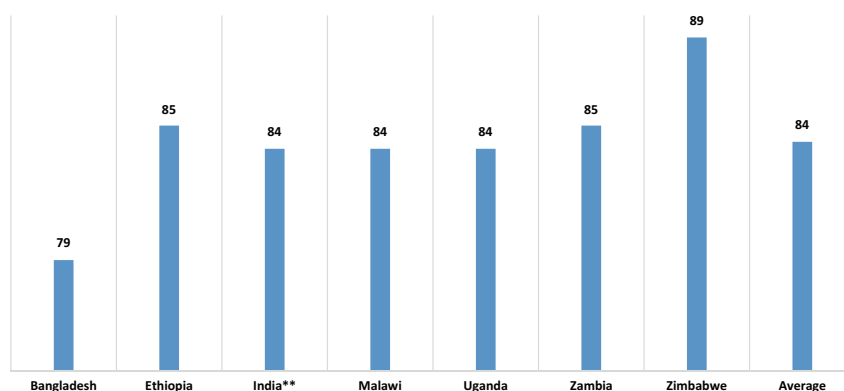


Master trainers in Ecuador

In the two districts of Lowero and Lusaka in Uganda, 34 health facilities implemented the quality improvement approach of team-based collaborative learning that integrated routine recording and use of service statistics to track provider performance and outcomes. Health providers attended 1,336 births of which 8 percent did not breathe at birth and needed resuscitation. Of these babies, 84 percent were successfully resuscitated.

As shown in Figure 6, several countries reported newborn resuscitation success rate that ranged from 79 to 89 percent. The action steps of HBB include drying and tactile stimulation, airway clearing and, if needed, bag and mask ventilation.

Figure 6. Percent of newborns with birth asphyxia resuscitated successfully*



*"Asphyxia" is defined as babies that are not breathing at birth. "Successful resuscitation" includes babies that breathe when one or more of the HBB action steps are taken: drying, stimulation, airway-clearing and bag-mask ventilation.

Source: Program reports, HBB Global Development Alliance, 2014.

**India data are based on facility records from Jharkhand, Haryana, and Uttar Pradesh states. An additional 10% (not shown in this chart) were resuscitated with oxygen for a total of 94% successful resuscitation

3. Impact

The Tanzanian HBB program has had the benefit of in-depth and rigorous studies that have been published in peer-reviewed journals. The impact study conducted in eight high volume health facilities with 80,000 births over two years in Tanzania demonstrated that, when HBB is implemented well, it can reduce early newborn mortality (within the first day of life) by 47 percent and fresh stillbirth by 24 percent.³⁸ This result has now become the benchmark for HBB programs in other countries.

In summary, the introduction of HBB has galvanized government leadership in scaling up newborn resuscitation in many countries, changed national plans, policies and guidelines, and increased the number of trained providers and equipped health facilities. While this has resulted in increased access to newborn resuscitation, it continues to be very low, hampered by low coverage of facility births.



Joint WHO/ENC and HBB multi-country training for French speaking countries in Senegal



HBB Global Development Alliance receiving USAID Excellence Award Oct 20, 2011

Awards

Partners of the GDA have received awards for their contribution to the reduction of newborn mortality. HBB was presented as one of 10 transformative breakthrough innovations in global health in a report that was launched at the UN General Assembly in New York in 2013. In 2011, the HBB GDA was presented with USAID's 2011 GDA Excellence Award by the Administrator in Washington DC. In 2013, Laerdal Global Health won the coveted INDEX Design to Improve Life Award in Denmark for designing sustainable solutions to global challenges. In 2014, Laerdal Global Health was announced as the winner of the Richard C. Holbrooke Business Leadership Award for Outstanding Contribution to Global Health, GBCHealth's most prestigious honor, for "contribution to the health of hundreds of thousands of mothers and babies across the developing world."

LESSONS LEARNED

The HBB GDA is an example of how a global public-private partnership can be an effective strategy for rapid rollout of a health intervention. The partnership leverages and relies on each partner's assets, cash and in-kind contributions, influence, networks, and program platforms; it facilitates coordination and harmonization of training methods and program approaches; and, it lowers the cost of products such as medical devices and training materials when private partners agree to lower the cost or profit margin of their products. The Alliance has shown how GDAs can influence global policy on interventions, shape the global market for products, stimulate the development of innovations and educational materials, and be a powerful advocacy voice through the widespread reach of their partners' influence and networks. The catalytic effect of the partnership model on multiple fronts - dissemination of global evidence and guidelines, simplification of a complex intervention, availability of equipment and of technical support - has had a concerted effect on influencing investments in USAID's country programs. For example, in an analysis of USAID's support to five high-impact newborn health interventions (resuscitation, kangaroo mother care, chlorhexidine, antibiotics, and antenatal corticosteroid) in 24 priority countries, it was found that 20 USAID Missions have supported newborn resuscitation at scale (>50% of their program areas). In addition, many other "non-priority" countries have also received significant USAID support to scale up HBB.

In the absence of a blueprint for scaling up resuscitation, one of the most important lessons learned by the GDA partners is that achieving impact requires more than training providers and distributing equipment. How to scale up interventions that have been shown to reduce mortality in field trials so that they achieve impact at scale is rapidly becoming a field of scientific inquiry. The evidence at hand suggests that, for HBB, the answer lies in an approach to implementation that is tailored to the local context, looks beyond training and equipment to other system components, and is carefully implemented, monitored and evaluated. The simplified HBB training methodology leads to significant improvements in knowledge and skills of birth attendants in simulation exercises but this does not necessarily translate into improvements in clinical performance. Promising solutions to address this challenge that are being pursued by many countries include low-dose, high-frequency practice drills, mentoring, and quality improvement processes integrated as part of the ongoing monitoring and supervision system. There will be a need for continued monitoring and evaluation of this broader systems approach.

HBB provides a solution for babies born in health facilities but leaves a huge gap for babies born at home. As shown in the Bangladesh report, a large percentage (over 60%) of babies were successfully resuscitated with the initial action steps of resuscitation (i.e., drying/stimulation and clearing the airway) and the number of babies that need ventilation with a bag and mask may actually decline if the initial steps are done effectively. Referral to a higher level facility is often not a viable option for birth asphyxia; resuscitation must be immediate or take place within a few minutes

of birth if the baby is to survive without life-long complications. Given this, a clearer articulation of implementing the initial action steps as an effective resuscitation intervention in home births by community health workers and family members might be a possible interim strategy in settings where the coverage of facility births is very low even as countries are building and expanding the capacity of facility delivery.

Achieving newborn mortality impact (and reducing the burden of injury in children surviving neonatal illness) also requires a broader mandate than resuscitation. Birth asphyxia is only one of three major causes of newborn death; addressing only one of them would not be sufficient to achieve the goal of eliminating all preventable newborn deaths. It became clear to the GDA partners that they needed to broaden their mandate and, after four years of their partnership in rolling out HBB, they expanded their mandate beyond resuscitation to include all high impact newborn interventions under an expanded GDA called Survive and Thrive.

Sustaining impact requires government leadership and ownership of the program; institutionalization within national plans, budgets, policies and guidelines; embedding the new clinical skills and quality improvement skills in pre-service education as well as in-service training; introducing appropriate indicators in national health management information systems; and establishing processes in the health facility on appropriate use of the facility data for self-monitoring and improvement. Equally important is the establishment of partnerships in countries that build on national technical working groups or steering groups and nurturing national champions to demonstrate their leadership in support of the national programs. Health professional associations played an important role in almost all countries as influential and respected champions, advocates, and trainers of the program.

Newborn resuscitation and other intrapartum complications are often the result of suboptimal management of labor and delivery and, therefore, can be prevented with stronger MNH systems that provide better obstetric care. The HBB program implementation and evaluation has also provided evidence that up to a quarter of stillbirths can be averted by training providers how to correctly classify stillbirths and attempt resuscitation. Many non-breathing babies that are misclassified as stillbirth can be resuscitated successfully if action is taken immediately.

HBB is an intervention that brings just two people together – the newborn and the clinician – in a dramatic moment of life and death when much depends on the clinician's ability to perform as s/he was trained. But the clinician's performance depends on a ripple of systems that support the clinician in ever-widening circles that begin at the facility level and expand outward to the district and national level health systems. Thus, while strengthened approaches to newborn resuscitation, as implemented through a simplified program like HBB, can garner dramatic short-term results in lowering newborn deaths, long-term sustained impact is only possible if interventions to address birth asphyxia and other intra-partum complications are part of a holistic systems approach.



In the new training program Essential Care for Every Baby, health workers learn to express breastmilk and keep the baby skin-to-skin. Training in Uganda.

FUTURE DIRECTIONS

The HBB GDA has advanced the cause of newborn health and laid the foundation for a significant reduction in asphyxia-related newborn mortality in the future. The HBB GDA has guided HBB through a successful initial period during which HBB has been widely adopted. After four years of a unique partnership that catalyzed and supported the rapid global uptake of newborn resuscitation, the alliance is at a crossroads regarding future directions. Moving forward, the partners have already taken steps towards the second phase of the HBB GDA, drawing on important lessons learned, to work more strategically and deliberately towards sustainability and national impact.

Broadening the scope:

The HBB GDA has broadened the scope of its mandate beyond newborn resuscitation by merging with the broader and newly established Survive and Thrive GDA to support newborn, child and maternal interventions in partnership with pediatricians, midwives, and obstetricians. To address newborn interventions, the Survive and Thrive partners have developed a modular educational package called Helping Babies Survive with the objective of tackling all major causes of newborn death – asphyxia, infections and preterm/low-birth weight complications. The Helping Babies Survive educational package includes four modules that are at varying stages of development: the existing HBB module that has been folded into the broader Helping Babies Survive umbrella suite, the new Essential Care for Every Baby and Essential Care for Small Babies modules, and the module on better management of labor and delivery (including antenatal corticosteroid) to prevent and manage newborn complications on the day of birth that is currently under development. The Survive and Thrive GDA envisions the Helping Babies Survive educational package to be a core component of global newborn programs to accelerate newborn mortality reduction. Partners have placed highest priority on aligning the content of the modules with the latest scientific evidence and in accordance with WHO guidelines and recommendations, including WHO in the review process, and engaging UNICEF and WHO in the rollout of the Helping Babies Survive program.



Midwife Genevieve from Zambia helped save a life today.
What did you do?

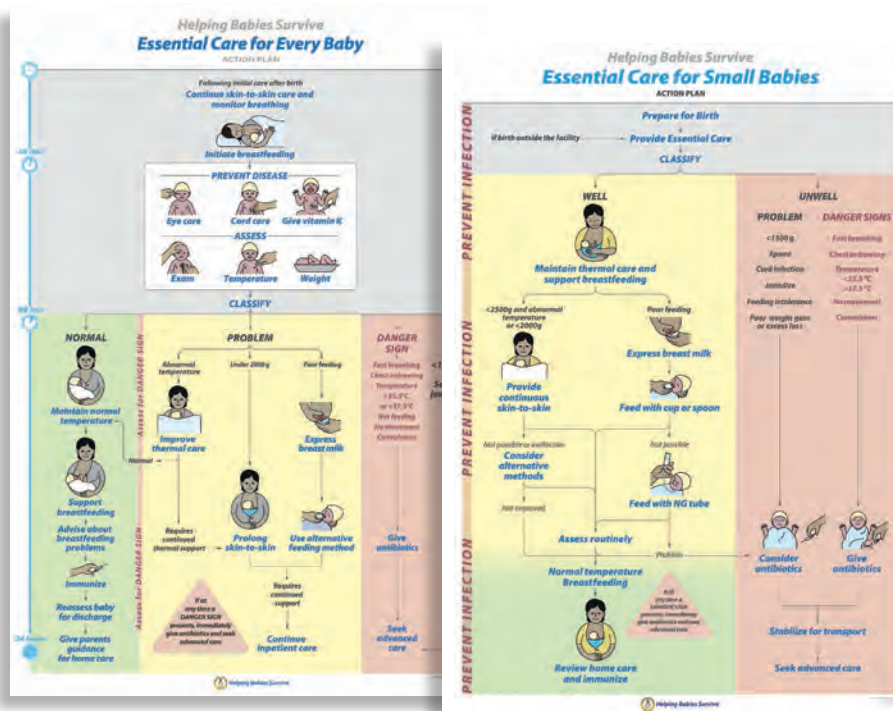
Strengthening systems and integrating quality improvement processes:

Under the umbrella of the Survive and Thrive GDA, HBB efforts will shift from rapid rollout in new countries to a greater emphasis on deepening and expanding support in countries where HBB has already been introduced with the objective of achieving sustainability and impact. The Survive and Thrive GDA has begun to focus on strengthening systems including commodity-related issues such as procurement and guidance for reprocessing of resuscitation equipment (monitoring and replacement to ensure functionality), data recording and reporting, and quality improvement processes to improve and sustain provider skills. Quality improvement will be an integral component of the Helping Babies Survive package – both in training and in implementation – and includes processes such as mentoring, data visualization as part of team-based learning and problem-solving, and regular practice drills through the low-dose, high-frequency approach.

Reaching every newborn:

The potential for HBB to achieve impact is severely limited in countries where rates of facility birth are low. Partners will need to develop and test alternative strategies to efficiently reach newborns born at home and in community settings. These may include alternative formulations of HBB (e.g., stimulation only, or stimulation plus airway clearing) for community-level providers.

The body of global experience does suggest that the HBB initiative will require additional years of intensive support if it is to achieve the impact envisioned by the founders of the Alliance. Given the investments that members of the Alliance have made in HBB, the passion and dedication that they still have for their effort, and the plight of millions of newborns that struggle to breathe at birth, it would be a missed opportunity of the highest order to not make the global HBB effort even more special than it already is.



Action posters for the new training programs
Essential Care for Every Baby and Essential Care for Small Babies.

Endnotes

- ¹ Msemo G. et al. *Newborn Mortality and Fresh Stillbirth Rates in Tanzania After Helping Babies Breathe Training*. *Pediatrics* (2013);131:e353–e360.
- ² Wall SN et al. *Neonatal resuscitation in low-resource settings: What, who, and how to overcome challenges to scale up?* *International Journal of Gynecology & Obstetrics*. October 2009, Vol. 107 Supplement, Pages S47-S64.
- ³ Carlo, W.A. et al. *Newborn care training and perinatal mortality in developing countries*. *New England Journal of Medicine*, 2010; 362: 614-23. *Practical Selection of Neonatal Resuscitators, Version 3: A Field Guide* <http://www.path.org/publications/detail.php?i=1565>
- ⁴ <http://www.path.org/publications/detail.php?i=1775>
- ⁵ Ibid.
- ⁶ *Intrapartum-Related Deaths: Evidence for Action*. *International Journal of Gynecology and Obstetrics*. Volume 107, Supplement 1, October 2009.
- ⁷ *Basic Newborn Resuscitation: A Practical Guide*, WHO, Geneva, 1998.
- ⁸ Wyllie J, Perlman JM, Kattwinkel J, et al. Part 11: Neonatal resuscitation: 2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. *Resuscitation* 2010; 81:260e87.
- ⁹ *Guidelines on Basic Newborn Resuscitation*, WHO, Geneva, 2012.
- ¹⁰ Msemo G. et al. *Newborn Mortality and Fresh Stillbirth Rates in Tanzania After Helping Babies Breathe Training*. *Pediatrics* (2013);131:e353–e360.
- ¹¹ Goudar SS. et al. *Stillbirth and Newborn Mortality in India After Helping Babies Breathe Training*. *Pediatrics* (2013);131:e344–e352.
- ¹² *Essential Interventions, Commodities, and Guidelines for Reproductive, Maternal, Newborn and Child Health; a Global Review of the Key Interventions Related to Reproductive, Maternal, Newborn and Child Health (RMNCH)*. Partnership for Maternal, Newborn, and Child Health. Geneva, Switzerland. 2011.
- ¹³ <http://www.path.org/publications/detail.php?i=2401>
- ¹⁴ The CE marking (Conformite Europeenne) certifies that a product has met the European Union health, safety, and environmental requirements, which ensure consumer safety.
- ¹⁵ Ersdal HL, Vossius C, Bayo E, Mduma E, Perlman J, Lippert A, Soreide E. A one-day “Helping Babies Breathe” course improves simulated performance but not clinical management of neonates. *Resuscitation* (2013); 84: 1422-27.
- ¹⁶ Mduma, Estomih; Hege Ersdal, Jeffrey Perlman, Erling Svensen. *Low dose, high frequency simulation training reduces early neonatal mortality*. *International Meeting for Simulation in Healthcare*, 2014
- ¹⁷ Sutton, RM, et al. *Low-Dose, High-Frequency CPR Training Improves Skill Retention of In-Hospital Pediatric Providers*. *Pediatrics* Vol. 128 No. 1 July 1, 2011
- ¹⁸ Duivedi, Vikas et al. *A Review of MNH-Related Data Elements Collected through National Health Management Information Systems*. Presented at the Newborn Technical Working Group. March 2015.
- ¹⁹ *Neonatal Resuscitation Devices: Market and Supply Update*, UNICEF Supply Division, August 2014.
- ²⁰ Eslami, Pegeen, et al. *Improper reprocessing of neonatal resuscitation Equipment in Rural Kenya compromises function: Recommendations for more effective implementation of Helping Babies Breathe*. Letter to the Editor, *Resuscitation* 91 (2015) e5-e6.
- ²¹ McPherson, Robert. *A Process Documentation of the Helping Babies Breathe Global Development Alliance*. MCHIP. November 2014.
- ²² McPherson, Robert. *A Process Documentation of the Scale-Up of the Helping Babies Breathe Initiative in Malawi*. MCHIP. June 2014.
- ²³ Gupta S. et al. *Evaluation of the Helping Babies Breathe (HBB) Initiative in Malawi: Results from the first round of data collection*: July 2013. JHPIEGO and Malawi MoH. July 2013.
- ²⁴ Arifin, Shams. *A short preliminary report on System Evaluation of scaling-up of Helping Babies Breathe (HBB) intervention in facility and community settings in Bangladesh*. Centre for Child and Adolescent Health, icddr,b. December 2013.
- ²⁵ McPherson, Robert. *A Process Documentation of the Scale-Up of the Helping Babies Breathe Initiative in Bangladesh*. MCHIP. June 2014.
- ²⁶ Msemo G. et al. *Newborn Mortality and Fresh Stillbirth Rates in Tanzania After Helping Babies Breathe Training*. *Pediatrics* (2013);131:e353–e360.
- ²⁷ *Bangladesh Service Provision Assessment Survey 2015*. National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International.
- ²⁸ *Ethiopia Mini Demographic Health Survey*, Central Statistical Agency. 2014. Addis Ababa, Ethiopia.
- ²⁹ *Health Sector Development Programme IV, Annual Performance Report, EFY 2006 (2013/14)*. Federal Ministry of Health, Ethiopia
- ³⁰ *Malawi Service Provision Assessment Survey 2013-2014*. Malawi Ministry of Health and ICF International. Training data is based on MOH HBB program report.
- ³¹ *Tanzania Service Provision Assessment, 2006*. National Bureau of Statistics, Ministry of Health and Social Welfare, and Macro International Inc.
- ³² *Tanzania Service Availability and Service Assessment, 2012*. Ministry of Health and Social Welfare.
- ³³ *Service Provision Assessment for Uganda, 2007*. Ministry of Health, Uganda, and Macro International Inc., Calverton, Maryland, USA
- ³⁴ *Service Availability and Service Assessment for Uganda, 2013*. Ministry of Health, Uganda
- ³⁵ Arifin, Shams et al. *Report on System Evaluation of Scaling up of HBB Intervention in facility and Community Settings in Bangladesh*. Icddr,b. January 2014.
- ³⁶ Mostaque Ahmed, *Newborn Care Surveillance Project Report*, MCHIP/Bangladesh, 2014
- ³⁷ Shivam Gupta. *Evaluation of the Helping Babies Breathe (HBB) Initiative in Malawi: Results from the Dose Response Analysis*, June 2014.
- ³⁸ Msemo G. et al. *Newborn Mortality and Fresh Stillbirth Rates in Tanzania After Helping Babies Breathe Training*. *Pediatrics* (2013);131:e353–e360

APPENDIX

Country Case Studies

Contents

Afganistan.....	62
Bangladesh.....	66
Cambodia	70
Colombia	73
Dominian Republic	77
Ethiopia	82
Ghana	86
India.....	90
Kenya.....	99
Malawi.....	103
Tanzania	106
Uganda.....	110

Reviewers and Contributors to Country Case Studies

1. Stella Abwao, Save the Children, USA
2. Malalai Ahmadzai, University Research Co., Afghanistan
3. Martha Serwah Appiagyei, Jhpiego, Ghana
4. Shams Arifin, iccdr,b, Bangladesh
5. Olga Arroyo, Ministry of Health, Dominican Republic
6. Sadia Faye Ayubi, Ministry of Public Health, Afghanistan
7. Mary Azayo, Ministry of Health and Social welfare, Tanzania
8. Abeba Bekele, Save the Children, Ethiopia
9. Roopa Bellad, Jawaharlal Nehru Medical College, India
10. Daniel B. Bruzzini, International Security Assistance Force
11. Sherri Bucher, American Academy of Pediatrics, USA
12. Nadira Hayat Burhani, Ministry of Public Health, Afghanistan
13. Brianna Casciello, PATH, USA
14. Amanua Chinbuah, PATH, Ghana
15. Annie Clark, University Research Co., USA
16. Robert Clark, Latter Day Saint Charities, USA
17. Patricia Coffey, PATH, USA
18. Patience Cofie, PATH, Ghana
19. Hege Ersdal, Stavanger University Hospital, Norway
20. Ike Ferguson, Latter Day Saint Charities, USA
21. Clara Galvis, Colombian Neonatology Association
22. Lloyd Jensen, Latter Day Saint Charities, USA
23. Fannie Kachale, Ministry of Health, Malawi
24. Hillena Kebele, Federal Ministry of Health, Ethiopia
25. Patricia Kelly, Project C.U.R.E, Ghana
26. Sam Kompheak, Reproductive and Child Health Alliance, Cambodia
27. Victoria Lweshu, Save the Children, Malawi
28. Ishtiaq Mannan, Save the Children, Bangladesh
29. Goldy Mazia, PATH, USA
30. Donan W. Mmbando, Ministry of Health and Social welfare, Tanzania
31. Yordanos Molla, Save the Children, USA
32. Georgina Msemu, Ministry of Health and Social welfare, Tanzania
33. Pilirani Msambati, Ministry of Health, Malawi
34. Gelasius Mukasa, Ministry of Health, Uganda
35. Ida Neuman, Laerdal Global Health, Norway
36. Chris Newsome, Reproductive and Child Health Alliance, Cambodia
37. Mame Yaa Nyarko, Pediatric Society of Ghana
38. Nasrin Oryakhail, Malalai Maternity Hospital
39. Ana Maria Penuela, Ministry of Health, Colombia
40. Anju Puri, Save the Children, India (currently with WHO/India)
41. Mirwais Rahimzai, URC, Afghanistan
42. Hen Ramy, Ministry of Health, Cambodia
43. Neema Rusibamayila, Ministry of Health and Social welfare, Tanzania
44. Jesca Nsungwa Sabiiti, Ministry of Health, Uganda
45. Isabella Sagoe-Moses, Ghana Health Services,
46. Rita Hashimi Salem, URC, Afghanistan
47. Magdalena Serpa, PATH, USA
48. Victoria Shaba, Save the Children, Malawi

49. Mohammad Shahidullah,
Bangabandhu Sheikh Mujib Medical
University, Bangladesh
50. Manjari Quintanar Solares, PATH,
USA
51. Saing Sona, Ministry of Health,
Cambodia
52. Sol Sowath, Reproductive and Child
Health Alliance, Cambodia
53. Youssef Tawfik,
University Research Co., USA
54. Naveen Thacker,
Indian Academy of Pediatrics
55. Chan Theary, Reproductive and
Child Health Alliance, Cambodia
56. Erica Thomas, Jhpiego, Tanzania
57. Juliet Cadungog-Uy, Reproductive
and Child Health Alliance,
Cambodia
58. Donna Vivio, United States Agency
for International Development
59. Priscilla Wobil, Millennium
Challenge Initiative, Ghana
60. Linda Wright, Eunice Kennedy
Shriver National Institute of Child
Health and Human Development.

Afghanistan Case Study

Dr. Mirwais Rahimzai, University Research Co. (URC); Dr. Nadira Hayat Burhani, Ministry of Public Health (MOPH); Dr. Nasrin Oryakhail, Malalai Maternity Hospital; Dr. Malalai Ahmadzai, URC; Dr. Rita Hashimi Salem, URC; Dr. Sadia Fayeeg Ayubi, MOPH; Dr. Youssef Tawfik, URC; Ms. Annie Clark, URC; Daniel B. Bruzzini, US Army

1. Background

WHO estimates that one million babies die worldwide each year from neonatal asphyxia. Helping Babies Breathe (HBB) is an evidence-based educational program developed by the American Academy of Pediatrics to teach basic newborn resuscitation in resource-limited countries. Evidence from five resource-limited countries where HBB was piloted demonstrated that this initiative can significantly reduce asphyxia-related neonatal deaths. In addition, HBB can help to achieve Millennium Development Goal 4, reduction of child mortality by two thirds from 1990 to 2015. Between 1990 and 2011, Afghanistan witnessed a 47% reduction in under-five mortality. However, 28% of under-five deaths occurred during the neonatal period in 2010, and 24% of these were due to birth asphyxia.

The launch of the HBB initiative in Afghanistan is one element of support provided by the Health Care Improvement project (HCI) to the Ministry of Public Health (MOPH) of Afghanistan to improve maternal and newborn health (MNH). During fiscal year (FY) 2012, maternal and newborn provincial-level health facility collaboratives in nine of the country's 34 provinces, and support for improving MNH and postpartum family planning services in five leading hospitals in Kabul, were combined with national-level support for the MOPH's policy on Improving Health Care quality and its Improving Quality in Health Care (IQHC) unit.

In FY11, gains were consolidated in the two original demonstration provinces for the MNH facility collaborative (Balkh and Kunduz), and the successful change ideas and approaches from Balkh and Kunduz were spread to three new provinces: Parwan, Herat and Bamiyan. In FY12, the best practices developed in the initial five provinces and in Kabul Province were scaled up in a second wave to sites in four more provinces (Wardak, Saripul, Samangan and Logar).

In addition to the facility-based MNH improvement work in 10 provinces plus Kabul, HCI has also worked with provincial health teams to improve community-based maternal and newborn care. The community MNH collaborative began in Balkh and Kunduz in FY10 but added sites in Parwan, Bamiyan and Herat provinces in FY12. To leverage the MNH work already being supported in Kabul hospitals, HCI began a small, core-funded family planning collaborative at five hospitals in FY11.

The overall goal of HCI was to contribute to reduced maternal newborn mortality in targeted provinces

through increased uptake, and high-quality, high-impact community and facility maternal newborn services applying state of the art quality improvement (QI) methods in a demonstration Improvement Collaborative.

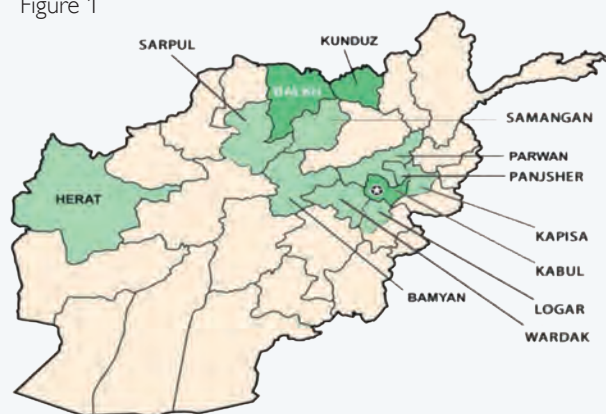
From the beginning of its efforts in Afghanistan, HCI established a strong partnership with the MOPH at the national level. The project put emphasis on building the capacity of national counterparts and engaging them in the design, implementation and monitoring of QI interventions to improve maternal and newborn care. HCI led the effort of supporting the MOPH in establishing a national-level QI Unit to lead the process of developing the strategy to improve quality in health care across different levels of the health system and to plan for the implementation of QI approaches to monitor and improve services across the country. In addition, HCI led the provision of technical support to the Afghan Public Health Institute, which is contributing to strengthening QI skills of health staff nationwide.

Figure 1 shows a map presenting the main phases of spreading the application of modern QI in maternal and newborn care in 11 major hospitals, 92 health facilities (basic health care centers, comprehensive health care centers and district hospitals). The first phase, in dark green, included three provinces (Kabul, Balkh and Kunduz) and focused on improving essential newborn care (ENC) and preventing postpartum hemorrhage through increasing coverage of active management of the third stage of labor (AMTSL). Once results were documented, interventions were expanded in two waves: first to three more provinces (Herat, Bamiyan and Parwan) and then a year later to four more. The strong partnership established with the national level served as the basis for facilitating the spread of the application of modern QI to seven other provinces, in lighter green, covering one-third of the country. Such spread was not only geographic, but also in content. QI interventions were divided into three phases:

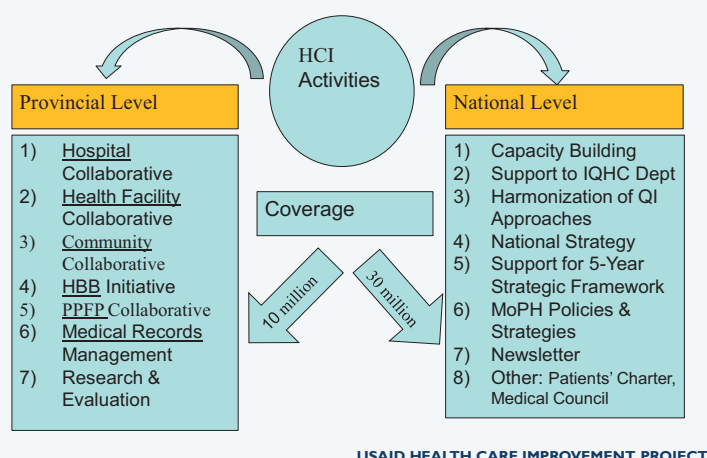
- Phase I: Interventions focusing on the process of care which lead to reduction of maternal and newborn mortality and morbidity such as: antenatal care and AMTSL, ENC, PNM and partograph use
- Phase II: Interventions focusing on the identification and management of pre-eclampsia and eclampsia
- Phase III: Interventions focusing in the reduction of maternal and newborn sepsis by improving the infection prevention situation

QI approaches were extended to new technical areas, such as integrating family planning counseling in postpartum care, improving the detection and management of pre-eclampsia, and improving medical records systems.

Figure 1



HCI in Afghanistan



In regards to the problem of neonatal deaths due to asphyxia, a needs assessment in the five provinces in Afghanistan where HBB was initially implemented found:

- Lack of newborn resuscitation and newborn care equipment (e.g., mucus extractor/bulb suction, cloth for drying and vitamin K) in some hospitals according to standards

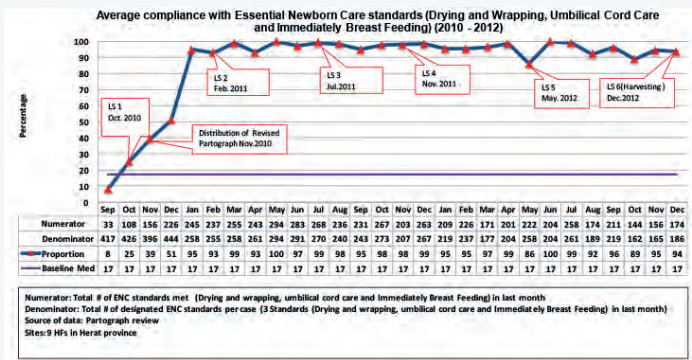
- Lack of baby hats
- Lack of baby blankets
- Lack of newborn resuscitation standard tables
- Lack of newborn asphyxia protocols in delivery room and operation theaters
- Lack of referral sheet for advanced management of newborn resuscitation
- ENC not performed according to standards
- Newborn resuscitation not performed according to standards

The overall goal for addressing the problem of asphyxia-related neonatal deaths was to illustrate key approaches and results related to introducing, improving and sustaining basic resuscitation services as an integral part of ENC in Afghanistan maternities.

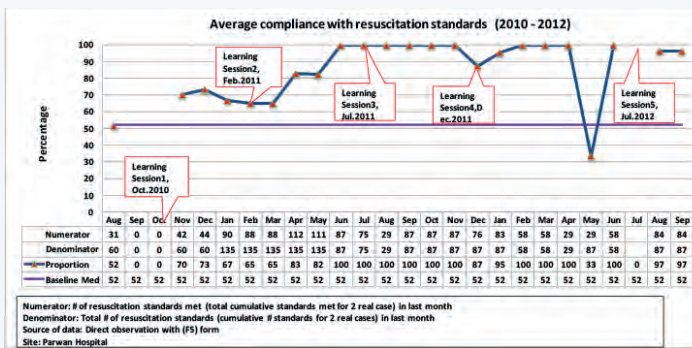
2. Key Approaches

- Engaging national, regional and facility leadership and adapting to Afghanistan's context/needs. HBB was introduced as a global initiative, a program that significantly reduces the newborn mortality due to asphyxia. The program was formally launched in 2010 by the Deputy Minister of Public Health, USAID Health Team leader and HCI Representatives.
- Creating front-line QI teams and providing them with ongoing support; ensuring integrated clinical and improvement capacity building of teams (on-site in maternities when possible).
- Integrating newborn resuscitation into ENC and incorporating AMTSL, a measure to reduce the incidence of postpartum hemorrhage in the mother; into the logarithm of immediate maternal/newborn care.
- Supporting frontline provider-staff teams to change care processes to overcome obstacles to provision of reliable evidence-based ENC/resuscitation (identified by frontline teams and via baseline assessment).
- Defining and continuously measuring simple common quality measures of resuscitation—including local team collection/analysis of results to inform QI.
- Addressing challenges and creating innovative means for monitoring quality for a procedural intervention like resuscitation (e.g., simulated refresher trainer/evaluation) including accurate prompt detection of asphyxia.
- Simple adaptation of the health management information system to capture selected quality indicators with ongoing support/monitoring of district, regional and national MOPH officials.
- Promoting shared learning/knowledge management between teams at regional level, between regions and at national level.
- Creating a pool of trainers to sustain HBB in Afghanistan's health system.
- Training almost 100% of skilled birth attendants in 10 provinces.
- Institutionalizing HBB by integrating it into the pre-service curricula for community midwifery and community nursing education programs and Ghazanfar Institute of Health Sciences.

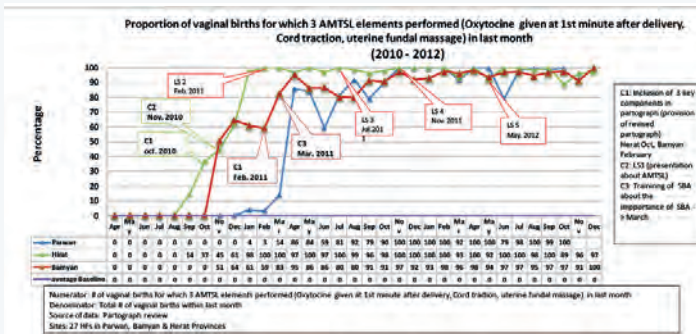
3. Results



The average compliance with ENC standards (drying, wrapping, umbilical cord care and early initiation of breast feeding) improved from 8% in September 2010 to 95% in September 2011 in nine facilities in Herat Province.



The average compliance with newborn resuscitation standards improved from 50% in August 2010 to 100% in September 2011 in Parwan Hospital.



The proportion of vaginal births for which the three elements of AMTSL were performed (oxytocin given one minute after birth, controlled cord traction and fundal massage) increased from 0% in August 2010 to 98% in Herat, from 0% to 91% in Bamyan, and from 0% to 90% in Parwan.

Results related to addressing the problems related to birth asphyxia include:

- Increased capacity of health providers to immediately diagnose birth asphyxia
- Decreased rate of asphyxia related newborn mortality in the health facilities

- Newborn resuscitation equipment provided to health facilities in 10 provinces and Kabul
- ENC/HBB integrated into the Reproductive Health Department of MOPH training materials
- ENC/HBB integrated into the pre-service curriculum of community midwifery education and community nursing education programs
- ENC/HBB training of trainers conducted for the U.S. Military Medical team (10 people) in Kabul in February 2013; thereafter the team trained 179 first line providers in two provinces
- Eight mannequin sets and some resuscitation sets along with training materials in local languages provided as requested by the U.S. Military Medical team
- A total of 125 ENC/HBB trainers and 974 providers trained in ENC/HBB between 2010 and 2013
- HBB is integrated into the curriculum of the Ghazanfar Institute of Health Sciences (GHIS)
- Handed over HBB Initiative and Postpartum Family Planning Improvement Collaborative to Reproductive Health Department end of June 2013
- As part of the handover process, 120 mannequin sets, 120 resuscitation sets, 120 training packages (facilitators guide and participants books) were donated to MOPH, GHIS, Afghanistan Midwives Association and Malalai and Isteqlal Maternity Hospitals.
- Review of medical records for 3 consecutive months in Malalai Maternity Hospital which catered to about 3000 deliveries a month showed:

Outcome results in Malalai Hospital

- PPH rate reduced from 8.7/1000 births to 3.5/1000 births
- Birth asphyxia rate reduced from 26.5/1000 to 18.5/1000 births
- Uterine rupture incidents reduced by 50%
- Maternal mortality reduced by 50%

USAID HEALTH CARE IMPROVEMENT PROJECT

4. Challenges

- Lack of basic equipment and supplies in hospitals
- Lack of skills needed for resuscitation newborns
- Low staff salary and low motivation
- Poor distribution of staff in shifts
- Lack of security
- Poor distribution of hospitals and patient load
- No proper continuous education program to improve subject matter knowledge
- QI programs mainly focusing on certain aspects of health system
- No earmarked funds for QI



HBB training in Malai Hopsital, Kabul

5. Lessons Learned

- It is VERY important to have a strategy for improving quality in resource-poor settings.
- Building improvement capability and having early success can be the catalyst for nationwide improvement.
- It is VERY important to test changes on a small scale and then spread them.
- Funds allocated for QI improve system efficiency and can save funds.
- Creating motivation is not easy, but once created, can be easily maintained.
- QI requires a long-term investment.
- Delivery of best practices at the service delivery level depends on the coordinated support of staff at multiple health system levels to ensure effective governance of the entire system, supportive policy, reliable availability of essential commodities, presence and regular support of competent staff, robust health information systems that can track quality of services, and appropriate financing mechanisms.
- Appoint a lead person in MOPH to focus on newborn health including HBB activities.
- Coordinate HBB activities under national-level leadership.
- Identify resources through various donors including private-public partnerships, promoting coordinated and efficient efforts monitored through a national mechanism.
- Develop action plans at the national level and adapt to suit regional/provincial and district requirements while ensuring an appropriate level of uniformity in standards and quality.
- Hold periodic meetings to enable the MOPH and partners to review and discuss results and take appropriate actions.
- Monitor and evaluate the effectiveness of the ENC/HBB program through documentation of indicators such as still birth (fresh and macerated) rate, neonatal mortality rate and first-day mortality rate.
- Establish policies and guidelines at national and subnational levels for: 1) procurement and distribution of the resuscitation commodities, 2) quality of care, and 3) case-based review at provider level.

6. Recommendations

- Continue to support the MOPH with the implementation of the IQHC strategy.
- Retain a core group of QI advisors who can support the MOPH for a longer term (minimum of 10 years).
- Build on the success and momentum that has been created.
- Continue the rollout of ENC/HBB to all remaining provinces in the country.
- Establish an ongoing mechanism for refresher training and certification in ENC/HBB.
- Provide essential newborn resuscitation equipment to facilities not yet equipped and replace equipment that is no longer functional as needed.

List of contributors:

Dr. Mirwais Rahimzai, University Research Co. LLC
 Dr. Nadira Hayat Burhani, Ministry of Public Health
 Dr. Nasrin Oryakhail, Malalai Maternity Hospital
 Dr. Malalai Ahmadzai, University Research Co. LLC
 Dr. Rita Hashimi Salem, University Research Co. LLC
 Dr. Sadia Fayeeg Ayubi, Ministry of Public Health
 Dr. Youssef Tawfik, University Research Co. LLC
 Ms. Annie Clark, University Research Co. LLC
 Daniel B. Bruzzini, US Army

Bangladesh Case Study

Sham Arifin (iccd;rb), Ishtiaq Mannan (Save the Children),
Mohammad Shahidullah (Bangabandhu Sheikh Mujib Medical University)

1. Country Statistics

NMR

- 32/1000 live births (Bangladesh Demographic and Health Survey [BDHS] 2011)
- 24.4/1000 live births (2013) IECRG

Skilled Birth Attendance

32% (BDHS 2011)

Causes of Newborn Death

Major killers: severe infection 20%, preterm complications 45%, birth asphyxia 23%. Other causes: congenital, diarrhea, tetanus. Data source: Bangladesh-specific mortality estimates (Liu et al. 2012). Notes: Severe infection include sepsis, meningitis, pneumonia and tetanus. Percentages have been rounded.

2. Preparation for scale-up

There was no newborn resuscitation program prior to Helping Babies Breathe (HBB) introduction. Successful piloting was done in 2010 in Bangladesh by Bangabandhu Sheikh Mujib Medical University (BSMMU) with the support of the Maternal and Child Integrated Health Program (MCHIP) and funding from USAID. After results of the pilot were disseminated, a series of stakeholder meetings were held before developing national scale-up strategy for HBB. Rollout of HBB was included in the national work plan in April 2011. The Ministry of Health and Family Welfare (MOHFW) decided to incorporate HBB into policy, strategic and planning documents as they are developed or revised periodically. In July 2011, the MOHFW has included HBB in the Program Implementation Plan of the Health Population Nutrition Sector Development Program (HPNSDP) 2011-2016 and its Operational Plan (MNCAH) and the Standard Operating Procedures for Newborn Care Services at Primary and Secondary Level Facilities. Efforts are currently underway to include HBB in the Maternal Health Strategy. Consensus was reached to revise the National Neonatal Health Strategy (NNHS) to include HBB and some other newborn interventions. In November 2011, the HBB scale-up plan was included in MNCAH Operational Plan for 2011 to 2016.

The MOHFW and its partners developed the plan to scale up HBB in Bangladesh in late 2010. The planning document—Scaling-up of Helping Babies Breathe Initiative (HBB) to Strengthen Newborn Resuscitation in Bangladesh: National Plan ('Scale-Up Plan' or 'SUP')—describes: the context; HBB pilot study and policy development issues and presents plans for activities with time frame; and institutional arrangement, roles and responsibilities of implementing agencies, monitoring and evalua-

tion activities, resource mobilization, a budget overview and a draft work plan that is periodically updated.

The supporting development partners for planning and implementation are: USAID, Save the Children (MCHIP, Saving Newborn Lives), United Nations Children's Fund (UNICEF), BSMMU and iccd;rb.

In terms of sequencing, the SUP divided the 64 districts into 11 groups where HBB was to be sequentially introduced in 11 steps (later revised to 12 steps). HBB training initiated in six districts from seven divisions in each step, and that provide opportunity for better supervision and monitoring by divisional health managers. A second priority for sequencing the districts was given to districts having UNICEF-supported MNCH/MNCS programs. A third consideration was given for being in line with control and intervention areas of the cluster-randomized HBB evaluation study conducted by iccd;rb.

The MOHFW, MCHIP, Save the Children, BSMMU, UNICEF and iccd;rb had the primary leadership roles in designing, financing and implementing the HBB scale-up.

- USAID: all training costs for all 64 districts; HBB equipment for 40 districts
- MOHFW, Government of Bangladesh: VAT and tax for all offshore procurement of HBB equipment; in-kind training and meeting venue, supervision support
- Laerdal Foundation: full funding for the HBB evaluation; provision of HBB equipment at subsidized price
- UNICEF: HBB equipment for facilities of 29 districts

Up to this stage of the scale-up, the MOHFW had not integrated routine funding for HBB into their financial and planning systems.

Adaptation of HBB for the local context

A local consultant translated the HBB materials with support and input from HBB stakeholders. The Save the Children team and BSMMU professionals drafted proposed additions and revisions, and a stakeholder consultation was held for review and approval. Adaptations and additions that were made as follows:

- The key HBB materials were translated into Bengali including the HBB Flipchart, HBB Action Plan and the HBB Learner's Book. The American Academy of Pediatrics (AAP) approved the translation.
- In consultation with AAP, the essential newborn care
- Bangladesh proposed to modify the standard HBB approach to cord cutting as NNHS states and local practices. AAP agreed to this modification.
- Bangladesh felt that one limitation of the HBB educa-

tional module is the section that describes how to clean resuscitation equipment. Once this gap was identified, HBB materials were adapted and placed in an annex.

3. Implementation

The training was designed using a cascade approach. A pool of master trainer was developed; master trainers subsequently trained district and sub-district level doctors as trainers. These trainers implemented large numbers of trainings of providers at district/sub district level. During the early stages of the scale-up, the HBB program trained all skilled birth attendants (SBAs) and selected medically trained providers of MOHFW facilities and communities as well as NGOs. To increase the potential impact of the HBB initiative, the decision was later taken to train SBAs of private facilities. Within each district, SBAs from all levels of the MOHFW health system were to be trained in HBB, in the following facilities or modalities: 1) tertiary hospitals and secondary hospitals, 2) sub-district (upazila) health facilities (UHCs), 2) union-level health facilities (Family Welfare Centers), and 3) community skilled birth attendants (CSBAs).

Supervision and monitoring: Mainly district- and sub-district-level health and family planning managers, partly by divisional and central level health and family planning managers, master trainers from national level and SCI managers were involved. Practice in regular monthly meeting has been incorporated (Health and Family Planning Department). The HBB program in Bangladesh has developed two HBB monitoring and supervision checklists that are currently in use. The first is a short checklist that is used by MOHFW health and family planning managers at the district and upazila levels to monitor HBB training activities during their visits to training events. The second is a more detailed checklist that is used by Master Trainers/trainers from BSMMU and SC during HBB monitoring and supervision visits. The HBB program also developed a checklist for use by BSMMU Field Officers during the Revisit Program. There is no separate system for supervision/monitoring of HBB services, rather it is integrated within existing government supervision/monitoring system.

HBB equipment was procured by Save the Children on behalf of the government and funded by USAID. UNICEF contributed partially. The brand purchased was Laerdal. All government facilities—from tertiary to union-level facilities, including CSBAs—were equipped with bag and mask. There are sufficient supplies in the program up to 2016.

Referral System

The referral system was expanded on the basic HBB Action Plan Chart by developing a more detailed algorithm for managing birth asphyxia in which it is stated that after 10 minutes of bagging; if there is heart rate then the baby should refer to an advanced care center with the

provision of bagging during transportation. Under the HBB program, all health facilities from union level to tertiary level were trained and equipped in addition to their available newborn care services. In Bangladesh, district and medical college hospitals have Newborn Intensive Care Units (NICUs) with secondary and tertiary levels of care, respectively.

Recording and reporting system

As of yet, there are no HBB-related indicators in national HMIS. The inclusion of resuscitation indicators in the HMIS is being pilot tested by the Directorate General of Family Planning (DGFP). Any parallel HMIS system was not developed by the project either.

HBB program managers require monitoring information that can be used to guide the HBB initiative; this has led to the development of the Newborn Care Surveillance System which was introduced in October 2013 and completed in December 2014.

Implementation status in country

HBB has been rolled out in all the facilities of 64 districts with 100% coverage. A total of 25,460 SBAs were trained in HBB by the end of project (February 2014). These SBA's are categorized as follows: doctors (5,248), nurses (7,353), Family Welfare Visitors (4,717), CSBA-trained Family Welfare Assistants (4,443), CSBA-trained Female Health Assistants (2,322) and paramedics with NGOs (1,401). Approximately 95% of MOHFW SBAs were covered.

In Bangladesh, icddr;b conducted an independent evaluation of the HBB program during its first two years of introduction and expansion. The study observed 7,138 deliveries in intervention and comparison areas at baseline and follow-up visits and interviewed 221 health providers, most of whom were nurses and midwives. The study found evidence of increased coverage of newborn resuscitation practices in facilities where providers conducting deliveries had received the HBB training. Both the practice of suctioning and stimulation had increased steadily from baseline to follow-up in the intervention facilities among newborns who did not cry at birth and who were not delivered by C-section. There was an increase in the comparison arm too, but it was not consistent across the three follow-up periods. Use of bag mask among babies who did not cry at birth decreased from baseline to follow-up in both intervention and comparison facilities; overall decline in the use of bag and mask in the intervention arm indicates more effective use of the initial steps of HBB, i.e., drying/stimulation and clearing the airway resulting in a decline in irrational or over-use of ventilation with a bag and mask. There was also some evidence of improved quality of newborn resuscitation (i.e., interventions done in correct sequence), but the effect was not very strong or consistent. Providers at high-volume facilities performed better; HBB-trained providers

performed better compared to other providers, and they showed better performance in the normal vaginal deliveries than in C-section deliveries. On the other hand, there was no such improvement among CSBAs. The evaluators concluded that training CSBAs in resuscitation will not enable Bangladesh to reach the millions of births that occur at home.

In addition to the evaluation study, MCHIP also established a surveillance system in 91 service delivery sites in nine districts to monitor the HBB program. The system enabled the HBB management team to track 17,316 births. Of the 1,060 babies (6%) who did not breathe at birth, 835 (79%) were successfully resuscitated (of these, 63% began breathing through the initial steps of drying, stimulation and/or clearing the airway with a mucous extraction suction bulb and an additional 37% needed ventilation with a bag and mask). Sixteen babies (1%) died and 209 (20%) were referred for advanced care.

The Bangladesh 2015 Service Provision Assessment shows that there were 48 percent health providers that were trained in resuscitation and that 55 percent of health facilities (not including community clinics) were equipped with resuscitation devices. This has resulted in 15 percent access to newborn resuscitation primarily in the public sector.

Strengths:

Political commitment; systemic linear approach; technical capacity; partnership and fund availability during scale-up period. BSMMU's pilot study initiated government involvement; political commitment; technical capacity and partnership; HBB project director came out as the chair of National Technical Working Committee on Newborn Health, which leads all newborn health related activity in Bangladesh; incorporation of HBB in national guidelines and curricula

Challenges:

Retention of skill; refresher training; cleaning of the equipment, especially in lowest-level facilities and in the community; addressing the private sector; non-availability of equipment in local market for private users; monitoring of implementation and outcome and linking with routine system; political turmoil. Refresher training; availability of equipment for private providers; monitoring of implementation and outcome and linking with routine system; government funding

Actions:

Introduced revisit program in old districts with practice session in routine system; introduced Newborn Care Surveillance. Included private facility providers in training

4. Institutionalization

Integration of HBB (has HBB been integrated and embedded as part of the national health program or is it treated as a special project; is it integrated with essential newborn care and/or emergency obstetric and newborn care? Is it integrated in the national HMIS?) While HBB was introduced as a vertical intervention in order to accelerate its rapid adoption, Bangladesh has sought to integrate HBB into existing MNH systems from the initial stages of its introduction:

Inclusion of HBB in MOHFW policy and strategic documents

- HBB has been adopted as official MOHFW policy and has (or will be) included in all relevant policy and strategic documents.
- Integration of HBB in pre-service and in-service training
- HBB has been integrated into pre-service education for physicians, nurses, midwives, Family Welfare Visitors and CSBAs.
- ENC content has been added to the HBB training materials as a supplement.
- HBB has been incorporated into Comprehensive Newborn Care package that is being piloted by the MOHFW in collaboration with Saving Newborn Live in one area and MaMoni-HSS and BSMMU in other areas.
- Integration of HBB in monitoring and supervision
- Pilot efforts are currently underway to partly integrate HBB into MOHFW monitoring and supervision systems.
- The MOHFW has introduced the Logistics Monitoring Information System with support of SIAPS which has also included HBB equipment.
- The DGFP is currently conducting a field test of a newly developed Maternity Register that collects information on a provider's performance of resuscitation with the potential to scale it up eventually into the permanent HMIS.
- HBB refresher training is being promoted through the Revisit Program.
- HBB program is led by the government, which is providing guidance to stakeholders and directives to district level.
- Budget for CD and tax for procurement of HBB equipment is on the government side; the government has a provision of CD and tax for further procurement up to 2016.
- HBB is intertwined with and supported by its integration into the MNH service framework and other aspects of the overall health system.
- The status of HBB with respect to system elements (policy, medical education and training, monitoring and supervision, routine services, and procurement and logistic systems) —contributes to the long-term sustainability of HBB.

¹ Arifin, Shams et al. *Report on System Evaluation of Scaling up of HBB Intervention in facility and Community Settings in Bangladesh*. Icdh,b, January 2014.

² Mostaque Ahmed, *Newborn Care Surveillance Project Report*, MCHIP/Bangladesh, 2014

³ *Bangladesh Service Provision Assessment Survey 2015*. National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International.



Midwifery teachers in Bangladesh testing the Upright bag-mask

5. Key Lessons Learned

- The HBB approach offers significant improvements in knowledge and skills of birth attendants to perform proper resuscitation of newborns (pilot study)
- Diverse leadership roles in implementing the scale-up and partnership made HBB rollout a successful model
- Provision of HBB practice and service equipment strengthened services
- Cascade training design was successful in rapid scale-up
- Plan for refresher training and monitoring is critical for skills-based training
- Programs dependent on training only as the key implementation strategy have limitation in monitoring, supervision and quality aspect (system evaluation)

6. Next Steps towards Institutionalization and National Impact (plans and recommendations)

- Continuation of HBB training, refresher and equipment replacement under MaMoni-HSS
- HBB has been incorporated in upcoming Comprehensive Newborn Care Package which will be rolled out after piloting
- training package Incorporated in different education curriculum (MBBS, Nursing, Midwifery, CSBA)
- Practice/refresher training included in routine system

Reference:

1. HPNSDP Program Implementation Plan
2. MCHIP-Operational Plan
3. National Scale-up plan of HBB 2011
4. HBB Process Documentation 2014
5. Program reports and PowerPoint presentations
6. MCHIP Bangladesh close out report 2014
7. HBB System Evaluation 2013
8. HBB Pilot Study 2011

Cambodia Case Study

Hen Ramy and Saing Sona, Ministry of Health

Sam Kompheak, Chris Newsome, Sol Sowath, Chan Theary, and Juliet Cadungog-Uy, Reproductive and Child Health Alliance (RACHA) Robert Clark, Latter Day Saints Charities

1. Country statistics

Cambodia's neonatal mortality rate (NMR) is 27 deaths per 1,000 live births as reported in the 2010 Cambodia Demographic and Health Survey, with slight decrease from the 2005 NMR of 28 per 1,000. One of the least developed countries in Asia, the country suffers from a high NMR, lack of high-quality health facilities and inadequately trained health workers especially secondary midwives in the rural areas. The direct causes of neonatal deaths in Cambodia are outlined in Figure 1.

2. Preparation for scale-up

A country-wide neonatal resuscitation training program began in 2004 in Cambodia. The Reproductive and Child Health Alliance (RACHA), a Cambodian nongovernmental organization funded by USAID, has been actively involved in providing country-wide training in neonatal resuscitation from 2004 to 2009 in partnership with the Church of Jesus Christ of Latter-Day Saints Charities (LDSC) and in collaboration with the National Maternal and Child Health Center (NMCHC) of the Ministry of Health (MOH).

The Helping Babies Breathe (HBB) program was introduced in 2010 to reinforce and continue efforts to reduce neonatal mortality.

HBB Baseline studies

In 2011, with support from LDSC, the RACHA team conducted a HBB baseline study, entitled Helping Babies Breathe (HBB) Knowledge and Skills Assessment of Maternity Staff in Select Districts of Cambodia. The intervention groups (N=23) included all district hospital and health center maternity staff of Monkol Borie Referral Hospital and O'Prasat Health Center in Banteay Meanchey Province and Sampov Meas Referral Hospital and Krakor HC in Pursat Province. The control group included all maternity staff (N=20) of Kampot Referral Hospital and Tuk Meas HC in Kampot Province. The main instru-

Figure 2. Comparative HBB knowledge mean scores

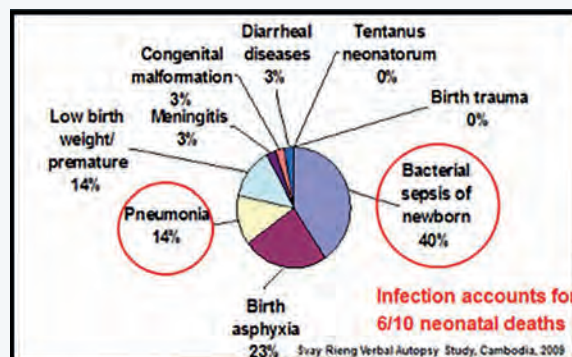
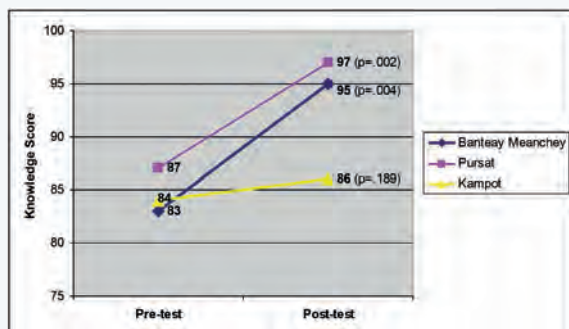
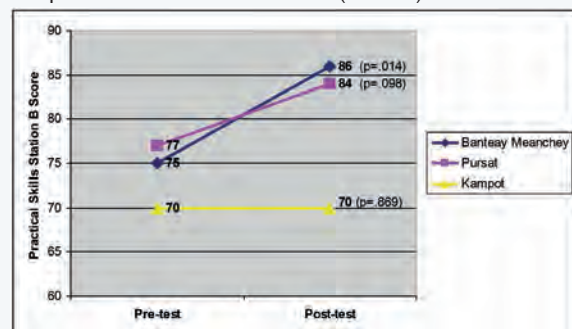


Figure 1. Causes of neonatal deaths (0–28 days) in Cambodia

ments used in assessing the HBB knowledge and skills of the maternity staff were the 17 items knowledge checklist, 13 questions basic care skills (Objective Structured Clinical Examination [OSCE] A) and 18 questions assisted ventilation skills (OSCE B) score sheets all translated into Khmer language. These were administered to participants before and after the HBB training. The control group was similarly assessed, but not trained. Results show that the knowledge of the intervention groups significantly improved after the HBB training. Their basic care skills and assisted ventilation skills also significantly improved (Figures 2 and 3).

The RACHA team conducted another baseline study, entitled Effect of HBB Intervention on Newborn Outcomes in Selected Referral Hospitals and Health Centers in Cambodia. A total of 1,366 postpartum women and their newborns were included in the assessments (644 women in the pre-intervention and 722 women in the post-intervention). Two questionnaires (clinical data and information locator forms) translated into Khmer were used as the primary data gathering tools. Results showed that neonatal deaths and fresh stillbirths at the intervention sites decreased after the HBB training but stillbirths increased at the control sites—both at Referral Hospital and Health Center (Figure 3).

Figure 3. Comparative assisted ventilation skills (OSCE B) mean scores



HBB materials

LDSC and USAID-RACHA were responsible for translating the HBB training materials, Learner Workbook, Flip Chart and Action Plan Poster from English into Khmer. This translation made HBB training materials accessible to all health professionals working in health centers and regional hospitals in Cambodia.

3. HBB implementation

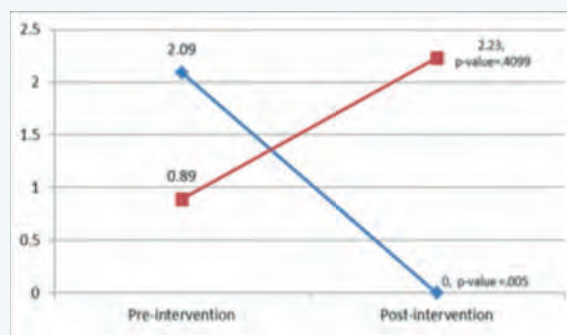
RACHA, in collaboration with LDSC, was the lead organization for rolling out HBB nationwide. Collaborating partners were the World Health Organization (WHO); the Reproductive Health Association of Cambodia (RHAC); University Research Co., LLC (URC); United Nations Population Fund (UNFPA) and United Nations Children's Fund (UNICEF). Initially, RACHA with technical support from LDSC, provided training to core trainers before scaling up the program in all 24 provinces of Cambodia. The key persons selected to attend the training of trainers courses were the Chiefs of MCH Provincial Health Department Operational Districts (PHD-ODs), Chief of Maternity wards of the health facilities nationwide. In total, there were eight master trainers from the NMCHC, 52 medical doctors and 94 midwives trainers. In turn, these trainers provided HBB training to birth attendants in their respective areas. Interactive and participatory methodologies were used by the trainers to improve retention skills of birth attendants.

The HBB program has trained a total of 3,689 midwives, 505 doctors and 153 nurses since its launching in September 2010 until September 2012. The numbers include those who attended the key intervention workshops and symposium with HBB component. RACHA developed a monitoring tool to collect data on stillbirths, non-breathing babies and use of bag and mask within its catchment areas.

Three hundred NeoNatalie/HBB training kits manufactured by Laerdal were purchased by LDSC, RACHA and RHAC and were distributed to all PHD/ODs, emergency obstetric and newborn care sites, maternity wards, regional training centers (RTCs) and implementing partners to facilitate on-site coaching to maintain newborn resuscitation skills. Since 2004 to 2014, a total of 450 NeoNatalie mannequins and 2117 Ambu bags were distributed to the health facilities and training centers across Cambodia.

Program reports estimate that 62 percent of providers have been trained in integrated newborn care and HBB and that 72 percent of hospitals and health centers have been equipped with resuscitation devices, thus providing resuscitation access to 50 percent of newborns.

Figure 4. Trend of stillbirths before and after HBB intervention



HBB integrated into INC coaching

The two-day Immediate Newborn Care (INC) coaching focuses on INC as routine, evidence-based practice: thoroughly drying, delay cord clamping, immediate skin-to-skin contact and exclusive breastfeeding for breathing babies, and HBB by resuscitation with bag and mask for non-breathing babies. INC was piloted in Kampong Cham Province in late 2011 before it was launched as a national initiative for scaling up nationwide. The World Health Organization (WHO), with financial support from AusAID and in collaboration with RACHA and RHAC, has led the INC coaching to all skilled birth attendants in three operational districts of Kampong Cham Province. In response to the request of the MOH and MNCHC for WHO to support the strengthening of INC, the two-day INC coaching courses were organized in collaboration with NMCHC, WHO, RHAC and MCH/PHD/ODs to scale up INC in all operational districts (district referral hospitals and health centers) of Kampong Cham Province.

After the integration of HBB into the package of INC, the INC coaching was scaled up to all provincial referral hospitals in the remaining 23 provinces. In collaboration with WHO, RACHA has provided technical and other support (mannequins, suction bulbs, bags and masks) to the NMCHC to strengthen INC practices through the scaling up and nationwide rollout of the INC coaching course for all health workers involved in maternal and newborn care. During the scale-up of INC from 2012 to 2014, 454 health workers at 71 referral hospitals and 2,074 health workers at 1,103 health centers have been trained in INC. It showed that more than half of health workers at health facilities in the country were coached on INC.

Currently, RACHA works on newborn HBB/INC in collaboration with GIZ/GFA-RACHA in four provinces of Kampot, Kep, Kampong Thom and Kampong Speu starting 2014 until 2015. In October 2014, RACHA has been awarded by USAID a five-year Empowering Communities for Health (ECH) project. The ECH project covers nine provinces and RACHA will work in collaboration with URC.

Challenges

High newborn death rate remains stable or has slight decline within the years and the lack of funds for the continued implementation of HBB were among the major challenges. Since late 2013 to 2014, RACHA did not receive any funding from USAID or from LDSC; therefore, it was difficult to sustain the whole HBB program. The MOH suggested RACHA integrate HBB into INC which is now under the package of WHO. In response, RACHA collaborated with WHO and the HBB program was integrated in part into INC and is running as a component of a wider program.

Another challenge was that the per diem rate reduction by USAID disinclined trainers to participate in workshops and reduced requests from PHD/ODs for HBB training causing the rollout of HBB training to be slower than anticipated or wanted. Advocacy was made to USAID to review the impact of the change in per diem rate. Consequently, the rate was slightly increased in 2012.

4. Institutionalization

Before the integration of HBB into INC, the HBB training was integrated into existing programs (e.g., Midwifery Co-ordination Alliance Team meetings). Newborn resuscitation (part of HBB) has been integrated into the National Safe Motherhood Protocols for Referral Hospitals and Health Centers. HBB is a component of the key intervention workshops. In addition, stillbirths, newborn referral and non-breathing babies at birth data were included in Cambodia Health Information System.

After HBB was integrated into INC, the two-day INC course (with integrated HBB coaching) has also been integrated into the comprehensive and basic emergency obstetric and newborn care training courses.

5. Key lessons learned

It was difficult to continue running HBB as a separate program without continued and adequate funding and

technical support. A doable option was to keep it running as a component of a well-funded wider program.

HBB training using interactive and participatory methodology was proven effective in improving retention skills of birth attendants (encourage on-the-job coaching with role play).

Birth attendants easily lose their HBB knowledge and skills over time. As a result, supportive supervisory visits are important to maintain their knowledge and apply what they learned into clinical practice.

In a resource-scarce environment, common problems include lack of equipment and supplies (e.g., sterile gloves, cord clamps, linens and stethoscopes) at health facilities which require allocation of budgets in the national health plan or funding from other generous benefactors.

6. Next steps towards institutionalization and national impact (Plans and recommendations)

Before the integration of HBB into INC, RACHA and collaborating partners planned for the following interventions: 1) integration of HBB into pre-service education midwifery curriculum of the five RTCs; 2) updates on HBB technical and facilitation skills for Master Trainers at least once every two years; 3) continued provision of materials for newborn resuscitation to health facilities to replace broken or missing items; and 4) continued provision of HBB training kits to the comprehensive and basic emergency obstetric and newborn care health facilities, PHD/ODs, RTCs and NMCHC for training, on-the-job coaching and supervision purposes.

Based on the latest information from Dr. Sano of WHO, "recently, the Ministry of Health of Cambodia with technical support from WHO, country and regional office, has introduced the new initiative for improving early essential newborn care (EENC). Baby resuscitation which is a core component of HBB is also a part of EENC. It started piloting in three provinces (Battambang, Kampong Cham and Takeo). The national EENC action plan is developing."

Figure 5
Core EENC interventions:

	Intrapartum care		Newborn care
	The First Embrace	• Labour monitoring (partograph)	• Immediate drying • immediate skin-to-skin contact • appropriately timed clamping and cutting of the cord • exclusive breastfeeding • routine care – eye care, vitamin K, immunizations, weighing and examinations
All mothers and newborn infants	Preterm and LBW infants	Preterm labour • elimination of unnecessary inductions and caesarean sections • antenatal steroids • antibiotics for preterm PROM	• Kangaroo Mother Care (KMC) • breastfeeding support • immediate treatment of suspected infection
	Sick newborn infants	Obstructed/prolonged labour Fetal distress • assisted delivery • caesarean section	Not breathing at birth • resuscitation Suspected sepsis • antibiotic treatment

Colombia Case Study

Dr. Clara Galvis (Colombian Neonatology Association), Dr Ana Maria Penuela (Ministry of Health), Brianna Casciello (PATH) and Dr. Goldy Mazia (PATH).

1. Introduction

The neonatal mortality rate (NMR) (11.2/1,000 live births) in Colombia has been stable in the last decade. Presently, the NMR is slightly higher than the average rate in Latin America and the Caribbean (LAC), where regionally, significant gaps in access and quality of services are pervasive. Recent figures indicate that 64% of under-five deaths in are newborn (Figure 1).¹ In addition, there are important inequalities in several departments. For example, the NMRs are nearly triple the national average in the southwestern departments of Guainía and Vichada as well as in the central coastal department of Choco, where the NMR is 29/1,000 live births. Furthermore, while Colombia has achieved nearly universal skilled birth attendance nationally, one in three births in rural areas of the Amazon are delivered outside the facility.

The complications of prematurity, sepsis and birth asphyxia (lack of spontaneous breathing at birth) are the three main causes of newborn mortality in Colombia. Significant improvements have been made (Figure 2), with a reduction in the number of newborn deaths per year due to asphyxia by nearly one-half during the 2000–2013 timeframe.

Figure 1: Newborn deaths contribute to nearly two-thirds of all deaths in the first year of life in Colombia, 2005–2010

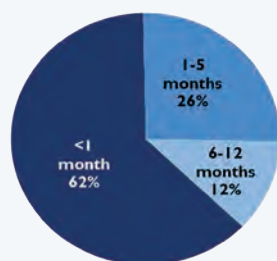
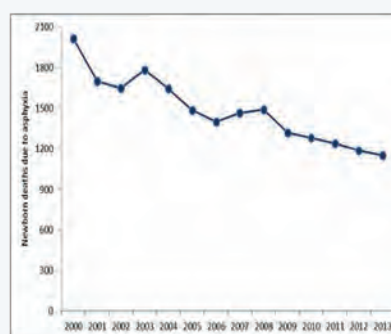


Figure 1 Source: Departamento Administrativo Nacional de Estadística (DANE) and Encuesta Nacional de Demografía y Salud (ENDS), 2010.

Figure 2 Source: WHO Global Health Observatory Data Repository, 2013.

Figure 2: Number of newborn deaths due to asphyxia in Colombia, 2000–2013



(MCHIP). The President and Vice President of ASCON were the first to receive training as master trainers, followed by MSPS participation in the TOT organized by MCHIP. The Pan American Health Organization (PAHO) approached MCHIP for technical assistance (TA) and incorporated HBB into their existing cooperation agreement with Colombia. MCHIP also played a key role in facilitating a collaborative relationship between MSPS and The Church of Jesus Christ Latter-day Saints-Charities (LDSC-C), allowing for further expansion of the HBB strategy following the end of the agreement between PAHO and Colombia.

2. Preparation for Scale-Up

The Colombian Ministry of Health and Social Protection (MSPS) and the Colombian Neonatology Association (ASCON) have driven the national scale-up of Helping Babies Breathe (HBB), presently in 25 of the country's 32 departments (Figure 3). A particular focus has been placed on conducting training in vulnerable areas where accessing services is challenging because of armed conflict and/or geographically difficult terrain.

The HBB curriculum was introduced to the country in 2011 through the participation of MSPS and ASCON in two key regional meetings: 1) the LAC Pediatric Association convening in Panama, in a training of trainers (TOT) sponsored by the American Academy of Pediatrics (AAP); and 2) the South American Forum of Neonatal National Alliances, held in Paraguay, in a TOT sponsored by USAID's Maternal Child Health Integrated Program

At the country level, MSPS adopted HBB quickly, initiating the national implementation process in coordination with ASCON and PAHO through two multi-regional TOT courses led by MCHIP. These courses were implemented in cooperation with the Health Care Improvement (HCI) Project, led by the University Research Co., LLC (URC). Ninety national trainers, including general practitioners, pediatricians and neonatologists participated. When selecting providers, a focus was placed on serving the country's most vulnerable populations in both geographically and politically challenging landscapes. The regions initially introduced to HBB include: Arauca, Cauca, Choco,

¹ CRVS Lancet Every Newborn Series. 2014.

² Plan de Acción de Salud Materna E Infantil Primeros Mil Días de Vida y Marco Estratégico Nacional Armonizado con el Plan Decenal de Salud Pública, Colombia 2013-2021. Pan American Health Organization (PAHO). 2013.

³ World Health Organization (WHO) Global Health Observatory Data Repository. 2013.

Nariño, Norte de Santander, Putumayo Amazonas, Vaupes and Vichada (Figure 3).

In 2012, with continued support from ASCON, AAP and MCHIP, MSPS facilitated training events during two international meetings, the Pan-American Neonatology Conference and the Pediatric Association of Latin America (ALAPE) Conference, reaching participants from 12 countries across the LAC region. In May 2012, MCHIP spearheaded coordination between PAHO, URC's HCI Project, MSPS and ASCON to organize a national TOT that included 40 regional Integrated Management of Neonatal and Childhood Illnesses (IMNCI) instructors, many of them affiliated to academic institutions. Additional national training courses were held in that same year, the largest hosting 90 nurses. By the end of its first full year of implementation, a total of 283 health care providers had been trained in country, including general practitioners, pediatricians, neonatologists and nurses.

Expansion efforts spearheaded by MSPS and ASCON continued in 2013, a year marked by several important events, including 1) the incorporation of HBB into national IMNCI guidelines and 2) the introduction of HBB in pre-service IMNCI curriculum as well as post-service training. International meetings, including The Latin and Ibero-American Pediatric Conference and the National Neonatology Conference, as well as national symposiums geared toward physicians and nurses, led to increased coverage nationally. By the end of the second year of implementation, HBB training had been delivered in 23 of the country's 32 departments.

MSPS continues to prioritize the underserved and most vulnerable, including its indigenous and Afro-Colombian populations, as well as promoting and carrying out HBB training for traditional birth attendants (TBAs) in areas of difficult access. As of December 2014, 1,859 trainers and providers have received HBB training.

HBB Funding, Inputs and Partnerships

MSPS has a national budget to carry out training courses and purchase equipment. ASCON sends invitations to the selected department's Health Secretaries, who in turn select 50 providers to participate. Additionally, ASCON develops the training agendas, selects trainers, collects and reports training registration information, and handles logistics arrangements, including venue selection. ASCON also covers the costs of meals for trainers and participants, per diems, lodging and transportation for participants, and distribution of materials, equipment and certificates. LSDC-C continues to provide financial and human resources in the form of equipment, materials and instructors, as well as venue and logistics support when not otherwise available.

Adaptation of HBB for the Local Context

In 2011, the HBB implementation guide and educational materials were translated into Spanish for use in LAC;

various versions of the translation were revised by MCHIP. The translated materials were tested during the South American Forum of Neonatal National Alliances. Pictures were also adapted to the various ethnicities of the region. MSPS requested and obtained permission to incorporate AAP images into the updated IMNCI guidelines.



3. Implementation

In-Service Training and Pre-Service Education

Presently, there are nine master trainers in Colombia; a master trainer is present at every HBB training, where the trainee-to-trainer ratio is 10:1. Upon successfully completing the training, one provider from each institution is given an HBB kit, including NeoNatalie simulator, and in turn, signs an agreement (Annex II) requiring the trained provider(s) to conduct a minimum of two replication trainings within a two-month time period. This strategy has provided two-fold benefits, as it has enabled many staff attending deliveries at peripheral facilities to participate in replication trainings and at the same time, has promoted that trainers practice and teach their acquired skills in neonatal resuscitation.

To date, a range of providers in Colombia have received HBB training, including auxiliary and registered nurses, general practitioners, pediatricians, neonatologists, obstetricians/gynecologists, anesthesiologists and respiratory and physical therapists. In addition, nursing and medical students in their final semesters of pre-professional training as well as specialty students in pediatrics, gynecology and obstetrics, and internal medicine have received training.

Actions to Improve Quality of Implementation and Retention of Skills

The duration of the training workshop is 10 hours completed by an additional practical component. Participants are organized into groups of no more than 10 per instructor; each group has at least three simulators, basic resuscitation equipment and several flowcharts, and each participant is given one manual. During the practical component, providers participate in role playing under specific circumstances. Participants also alternate roles between teacher and participant, which has been identified as an important concept for carrying out successful training and enhancing adult learning.

⁴ Colombian Neonatology Association (ASCON). 2015.

Pre- and post-tests are administered to evaluate participants' existing knowledge and to address any gaps. Following the trainings, ASCON provides trained providers with in-person and virtual support in HBB and advanced resuscitation.

HBB Equipment and Logistics Systems

The Directorate of Health Services and Pharmaceuticals serves as the national regulatory committee for medical equipment and supplies. Established in 2014, Resolution 2003 establishes that "all medical facilities providing obstetrical care, neonatology services, intermediate and intensive care must have the necessary medical equipment to deliver respiratory therapy and oxygen administration to newborns." Established in 2011, Decree 4107 states "the Directorate, in coordination with designated authorities, is responsible for the design, adaptation, and evaluation of policies regarding pharmaceuticals, medical equipment, and biomedical technology." Presently, there are no existing guidelines in place for the procurement of new and replacement HBB equipment and materials; MSPS and ASCON procure materials from Laerdal which ships the materials from China.

Training materials are printed in-country with AAP authorization. LDSC-C donates materials and equipment. Equipment is distributed at the end of HBB training courses, wherein one health care provider from each institution represented is selected and given one HBB kit which includes: NeoNatalie mannequin, two facilitator flip charts, 10 participant workbooks and two action plans (one wall poster and one small size). To date, nearly 60 kits have been distributed. Trained providers receive their HBB certificate upon submitting documentation (participant list and photos and/or videos) of completion of three replication trainings.

Recording and Reporting System

In 2013, MCHIP shared the data collection tools and indicators piloted in the Dominican Republic under MCHIP. MSPS showed great interest in measuring; however, uptake has not been achieved to date. Newborn health program indicators, including mortality, causes of death, and stillbirths, are recorded in facility registers and reported to regional MSPS departments for analysis. MCSP has received a request for technical assistance from ASCON (as the advisory group for MSPS) for indicators and data collection tools.

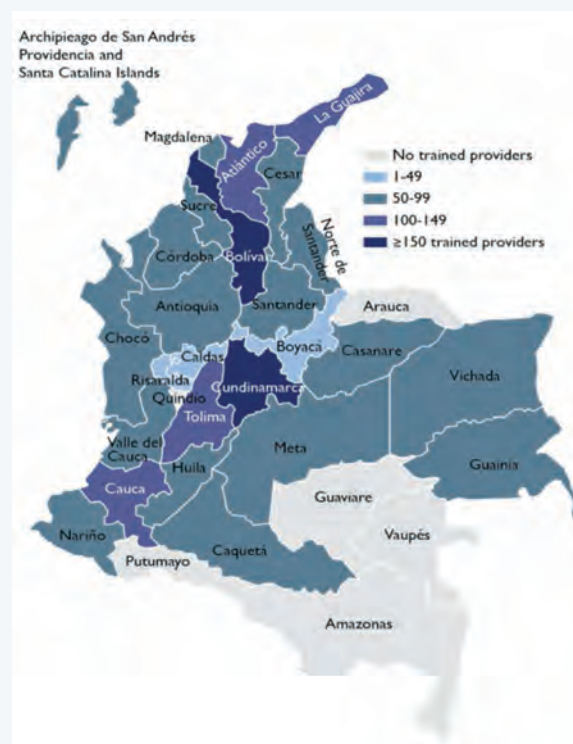
Implementation Status in Country

As of 2015, there are trained providers in 81% of the country's departments (26 of 32). The number of trained HBB providers to date in each department can be found in the table at the end of this annex.

The advanced Neonatal Resuscitation Program (NRP) is available in all higher level facilities; by implementing HBB in 81 percent of the country targeting vulnerable popula-

tions in hard to reach areas, the country expanded access to resuscitation among the under-served populations.

Figure 3: Trained HBB Providers by Department



4. Institutionalization

Integration of HBB

HBB was embedded into the national newborn health program through its incorporation into IMNCl guidelines in 2013. This year (2015), the HBB program is anticipated for inclusion in the First 1000 Days guidelines, which seeks to integrate approaches for health from conception until a child's second birthday.

Sustainability of HBB

The HBB program is led and owned by the government, and further supported by scientific societies, donors and development partners. Formerly, MCHIP and PAHO provided financial and human resources. MCHIP facilitated coordination between LDSC-C and MSPS for continuation of activities, a now collaborative partnership that continues today. MSPS, in coordination with ASCON, coordinates and guides the implementation process according to the highest newborn morbidity and mortality rates reported in the First Days Health Plan.

5. Key Lessons Learned

Summary of Success Factors

MSPS and ASCON have taken complete ownership of the implementation and scale-up of HBB. Trained staff have demonstrated their commitment to training their

referring facilities. HBB training courses have been funded in great part by MSPS and ASCON, demonstrating the clear transfer of ownership and uptake by the government. Several HBB champions emerged at the outset of intervention and have continued to play a fundamental role in scaling up HBB. These include: ASCON board members, PAHO and MSPS technical staff, particularly the IMNCI national trainers—many of whom are also university professors and have included HBB in the pre-service curricula.

The government has authorized training of TBAs in those regions where no health care provider is present or accessible. The first TBAs successfully completed HBB training in 2014. Despite having limited formal education (some illiterate), the participating TBAs demonstrated a clear commitment and dedication to acquiring basic neonatal resuscitation skills. The HBB training presented an opportunity for trained providers to work uniformly with TBAs to promote adequate newborn care.

Summary of Challenges

MSPS and ASCON have identified the need to build the capacity of providers in the areas of training, supervision and logistics.

Next Steps toward Institutionalization and National Impact

Plans

Data collection on basic resuscitation and essential newborn care at birth indicators will continue to generate valuable new information for program adjustments. Ongoing monitoring and supervision of data collection is needed to ensure timely and accurate information. Collecting information related to retention of skills will also inform training and reinforce the acquisition of skills and practice.

Recommendations

- Develop a procurement plan for acquisition of equipment.
- Conduct an assessment to determine amount of equipment needed in each implementing hospital. The UN Commission has developed a quantification tool for newborn resuscitation equipment that can be used for this purpose.
- Continue pre-service training for students in health care in existing universities, and consider expansion to other academic institutions.
- Conduct refresher training.
- Include resuscitation data in labor room registers to collect, analyze and report related indicators.
- Advocate for HBB training to be a requirement for all health personnel providing newborn care.
- Advocate for the uptake of HBB indicators building on pilot conducted in the Dominican Republic

under MCHIP.

- Advocate for active participation of implementing hospitals in the LAC HBB virtual Community of Practice, created and managed by USAID's ASSIST project, which provides an avenue for health care providers to continue engagement among program implementers at the facility level within the country and across the LAC region.

Figure 4 Number of Trained HBB Providers to Date, by Department*

#	Department(s)	Number of Trained Providers
1.	Amazonas	-
2.	Antioquia	50
3.	Arauca	-
4.	Atlántico	105
5.	Bolívar	210
6.	Boyacá	34
7.	Caldas/ Risaralda	48
8.	Caquetá	50
9.	Casanare	50
10.	Cauca	106
11.	César	52
12.	Chocó	85
13.	Córdoba	70
14.	Cundinamarca	313
15.	Guainía/ Vichada	90
16.	Guaviare	-
17.	Huila	50
18.	La Guajira	127
19.	Magdalena	71
20.	Meta	50
21.	Nariño	50
22.	Norte de Santander	50
23.	Putumayo	-
24.	Quindío	-
25.	San Andrés, Providencia and Santa Catalina	50
26.	Santander	50
27.	Sucre	63
28.	Tolima	119
29.	Valle del Cauca	50
30.	Vaupés	-

*As of February 2015 (ASCON).



Dominican Republic Case Study

Dr Olga Arroyo (Ministry of Health), Dr. Goldy Mazia (PATH), Dr. Lloyd Jensen (Latter Day Saints Charities), and Brianna Casciello (PATH)

1. Introduction

The Dominican Republic (DR) has the third highest neonatal mortality rate (NMR) (21/1,000 live births) in Latin America and the Caribbean (LAC) (after Haiti and Bolivia)—more than double the average NMR for the LAC region (10.6/1,000 live births) and approximately one-third higher than the global NMR (14.6/1,000 live births). The country's NMR is comparable to present rates in Madagascar, Rwanda and Tanzania. The DR has achieved a 47% reduction in the under-five mortality rate since 1990, but the NMR has not been reduced at the needed rate. Along with 69% of countries in LAC (18 of 26 countries), the DR will not reach the Millennium Development Goal 4 target of two-thirds reduction by 2015.

Most recent figures indicate that 55% of under-five deaths are among newborns. This proportion is higher in the DR than in all but two of the 24 USAID priority countries (Bangladesh at 60% and Nepal at 57%).² At the same time, the small Caribbean island country, home to ten million, has a very high skilled birth attendance (SBA) rate (99%). A strong inverse correlation between NMR and skilled birth attendance indicates a clear need for the improvement in quality of newborn care in the DR (Figure 1).

Figure 1: NMR, IMR, and SBA in the DR, 1990–201

	Year	NMR	IMR	SBA
National		21	31	99%
				72% public sector
				27% private sector
Urban	2013	24	—	98.9%
				70% public sector
				28.9% private sector
Rural		17	—	97.4%
				76% public sector
				21.4% private sector
National	2011	14	25	—
National	2007	23	37	98%
				78% public sector
				20% private sector
National	2002	22	38	—
National	2000		39	
National	1996	27	57	
National	1991	24	59	
National	1990	26	58	

Figure 1 Sources: ENDESA (Demographic Health Survey). Dominican Republic, 2013. United Nations Statistics Division, 2011.

Up to two-thirds of newborn deaths can be prevented if known, effective health measures are provided at birth

and during the first week of life. Birth asphyxia, or the lack or spontaneous breathing at birth, is one of three main causes of newborn mortality in the country, along with complications of prematurity and sepsis. Birth asphyxia claims between 700 and 1,000 deaths each year in the DR (13% of all newborn deaths).

2. Preparation for Scale-up

Helping Babies Breathe (HBB) was introduced to the USAID Mission in the DR under the Maternal and Child Health Integrated Program (MCHIP) in 2010. A basic newborn resuscitation module had been included in the national Integrated Management of Neonatal and Child Illness (IMNCI) guidelines. At the time of HBB introduction, and together with IMNCI, the advanced competency-based Neonatal Resuscitation Program (NRP) of the American Academy of Pediatrics (AAP) was being and continues to be used for national training programs with support from the AAP and The Church of Jesus Christ of Latter-day Saints Charities (LDSC-C). From 2005 to 2012, AAP, LDSC-C, and the Pan American Health Organization (PAHO) in coordination with the DR Ministry of Health (MoH), conducted NRP training courses for 635 facilitators serving all nine of the country's health regions. The Pediatric Society of the Dominican Republic and the MoH developed committees to implement official training courses, enabling trained providers to replicate the NRP course to an additional 4,200 health care providers.



Dominican MoH representatives (Drs. Luz Herrera and Donatilo Santos pictured) participated in a regional ToT for HBB during the Mesoamerica Forum of National Neonatal Alliances in Nicaragua in 2011.

The introduction of HBB in the DR was a multi-step process that promoted the involvement and ownership of the MoH from the outset. During the launch of HBB in June 2010 in Washington, DC, organized by the Global Development Alliance, representatives of the MoH and USAID (MCHIP and the bilateral, Abt Associates' Maternal and Child Health [MCH] Centers of Excellence) participated and received Master Trainers certification.

¹ ENDESA (Demographic Health Survey). Dominican Republic, 2013.

² Prioritizing Newborn Health in USAID's Health Program Handout, 2014

³ Child Mortality Estimates: Dominican Republic. UNICEF. 2015.

⁴ MDG Progress Status. World Bank. 2015.

⁵ CRVS Lancet Every Newborn Series. 2014.

Here four master trainers from the DR were accredited under the premise that the country would pioneer HBB implementation in the LAC region. Following the global launch, MCHIP presented HBB to the USAID Health Officer, who in turn allocated field funds for both the MCHIP and the bilateral projects to carry out HBB-related activities in their geographic areas of work. When Spanish materials became available, additional DR MoH representatives participated in the Mesoamerica Forum of Neonatal National Alliances held in Nicaragua in 2011. At this forum, the LAC Neonatal Alliance endorsed HBB and led a regional training of trainers, MCHIP's DR technical staff formerly trained in Washington, DC participated in the training of trainers as one of the trainers. High-level clinicians from the Maternidad de Nuestra Señora de la Altagracia, a national referral hospital with an estimated 22,000 annual deliveries, participated in the second LAC regional HBB training held the following year during the Latin American Association of Pediatrics (ALAPE) regional meeting in November 2012 in Cartagena, Colombia.

USAID DR and LDSC-C were key stakeholders supporting the scale-up of HBB in the DR. In 2012, the USAID bilateral prioritized MCH Centers of Excellence following the submission of written proposals to improve MCH care by the facilities. MCHIP provided technical assistance for newborn health activities for the Centers of Excellence. In July 2011, MCHIP held its first HBB training in coordination with the USAID bilateral, with the participation of 30 regional trainers covering public referral facilities from eight of the nine health regions. MCHIP and the Centers of Excellence Project continued to coordinate and support training of providers, and data collection activities in those sites. In 2013, MCHIP and LDSC-C, in coordination with PAHO and the MoH, co-sponsored their first joint HBB training, reaching 53 providers. In 2014, LDS-C and MoH held a training of trainers (TOT) course with 48 participants.

HBB Funding, Inputs, and Partnerships

Training and materials/equipment were provided by USAID (bilateral and MCHIP) for the 10 Centers of Excellence. MCHIP provided training materials, equipment and technical assistance totaling an estimated \$70,000 over two years. The bilateral provided service equipment (bags and masks and suction bulbs) for the 10 facilities. The MoH provided time for the trainers and trainees.

As the program expanded its reach, MCHIP led coordination efforts between the MoH, Abt Associates MCH Center of Excellence Project, and LDSC-C, a nonprofit organization with a longstanding history supporting NRP in the DR. Beginning in 2013, LDSC-C provided both human and financial resources (including equipment, training materials and trainers) to expand new HBB programs and strengthen existing ones. Presently, the MoH has a very limited budget for carrying out HBB training.

Adaptation of HBB for the Local Context

MCHIP spearheaded the first steps to initiate HBB implementation in the DR by overseeing the translation and adaptation of pictures to the various ethnicities of the LAC region. In 2011, MCHIP hired a consultant from the region to translate the HBB implementation guide into Spanish. The USAID bilateral translated the educational materials. MCHIP guided the revision process that followed, which took several months to complete as it included inputs from stakeholders, MCHIP and the AAP. Approvals for a version appropriate for all Spanish-speaking countries in the LAC region was granted after approximately one year.

3. Implementation

In-Service Training and Pre-Service Education

In the Dominican Republic, a critical mass of trained providers exists, including registered and auxiliary nurses, pediatricians, neonatologists, obstetricians-gynecologists, anesthesiologists, general practitioners, residents in various programs and interns. The trained providers mainly work in the public sector. To ensure quality, MCHIP used a cascade training approach that involved National Master Trainers. A solid group of trainers was formed, enabling for the replication of HBB training in various regions of the country, including staff of peripheral facilities attending deliveries. In October 2013, LCDS-C trained 17 nursing educators who have since incorporated the HBB curriculum in their eight institutions.

“It is recommended that Helping Babies Breathe be included in undergraduate and graduate curricula at universities to guarantee high-quality newborn care at birth. The HBB initiative has generated interest among all health professionals in the Dominican Republic, who understand that in order to respond appropriately, all health providers who provide assistance at birth should be [skilled and equipped to help babies breathe] trained in HBB.”

— Dr. Nieves Rodriguez, MCHIP in country Technical Lead

Actions to Improve Quality of Implementation and Retention of Skills

MCHIP tested feasibility of data collection in the delivery room to report program indicators for essential care at birth including HBB. Facilities collected and analyzed data for improvement of quality of care (i.e., finding low percentages of early breastfeeding and taking actions to improve). Supportive supervision was recommended locally but follow-up was not possible due to program closure. Beginning in 2012 until January 2014, technical assistance was provided to the bilateral for the implementation and supervision of HBB in MCH Centers of Excellence. In addition, refresher courses were conducted in 2013 for facilitators at the Centers of Excellence.

⁶ *Newborns: Reducing Mortality Fact Sheet N333, World Health Organization (WHO). 2012.*

⁷ *World Health Organization (WHO) Global Health Observatory Data Repository. 2013.*

HBB Equipment and Logistics Systems

The MoH has recommended standards for newborn resuscitation equipment that includes mask and bag and suction. The MoH is responsible for procuring equipment that is not produced locally. The approximate wait time for an order to arrive in-country (and clear customs) is two months. A 16% sales tax is incurred when bags and masks are purchased in country. There is no national regulation on selling these products in the local market. The country currently does not have a national regulatory committee for medical equipment and supplies. Health establishments are responsible for soliciting newborn resuscitation equipment from the MoH at the regional level; some hospitals do not have the appropriate number of masks for babies.

Since 2005 LDSC-C has donated more than 320 training sets (Laerdal NRP mannequins and teaching equipment), 650 clinical resuscitation kits (bag and mask, suction device, and stethoscope), 150 NeoNatalie models, 75 HBB flip charts and 1,040 HBB workbooks for training and clinical use. Teaching equipment is typically donated to the facilities as well for use in future training. MCHIP donated 70 sets of equipment as well as educational materials at the time of program closure for continued scale-up of the HBB curriculum.

Recording and Reporting System

MCHIP and the MCH Centers of Excellence presented technical indicators related to basic newborn resuscitation and essential newborn care at birth. Furthermore, MCHIP developed a register allowing for the collection and analysis of these new newborn health indicators (pictured right). In 2013, data collection was initiated in three regional hospitals (San Lorenzo de los Mina (los Mina), San Vicente de Paul Regional Hospital (HSVP), and Dr. Antonio Musa Hospital (MUSA). These indicators were recommended for inclusion in the national health management information system during stakeholders meetings with the MoH for advancement of a newborn health action plan. An initial analysis showed actions related to the practice of HBB. Of 19,200 live births from April 2012 to March 2013, 677 newborns in four centers did not cry at birth (3.5%); of these, 240 (3.5% of babies not crying) required and were successfully resuscitated with bag and mask ventilation.

Implementation Status in Country

In two years, MCHIP coordinated and facilitated a total of 23 training sessions in the DR, one for regional trainers and 22 for providers, resulting in a total of 52 regional facilitators and 573 providers trained in country. Figure 2 (below) illustrates the location of the ten hospitals trained in HBB under MCHIP.

1. San Lorenzo de los Mina
2. Toribio Bencosme
3. San Vicente de Paúl
4. Jaime Mota
5. Antonio Musa
6. Teófilo Hernández
7. Alejandro Cabral
8. Luis Bogaert
9. Morillo King
10. Inmaculada Concepción

MCHIP, with support from the USAID Mission, established a collaborative relationship with the LDS-C for further expansion of the HBB strategy. LDS-C continued scale-up by providing human and in-kind resources, including trainers, training equipment and supplies. In October 2014, LDS-C and the MoH led an HBB training course with 48 participants who have since trained additional health care providers. Hospitals have been selected based on the following criteria: 1) referral centers for one of the 10 hospitals originally trained; 2) areas with the highest newborn mortality and 3) demonstrated interest and commitment in the HBB program. Annex 2 includes a list of hospitals and institutions that have received HBB training since January 2014.

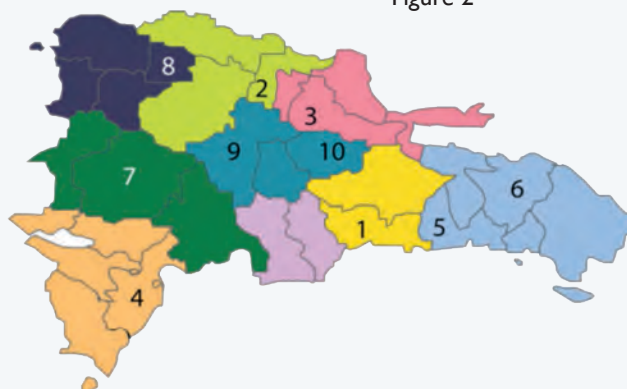
4. Institutionalization - Integration of HBB

Joint advocacy efforts by MCHIP and the USAID Mission with the MoH for the incorporation of HBB in the IMNCI were unsuccessful during the duration of the MCHIP country program. At the same time, as the MoH continually decentralizes its services at the local level, the demand for the HBB program continually increases. In a collaborative effort, LDSC-C and MCHIP promoted the combining of NRP and HBB programs, given how well-received the program was in hospitals implementing HBB under MCHIP and its impact on empowering nurses, as well as the impending closure of the MCHIP project. Sustainability of HBB

To promote sustainability of the program, MCHIP and the USAID Mission facilitated coordination with the LDSC-C for continuation of activities and monitoring.

Antonio Musa Hospital serves as an excellent example of HBB ownership and sustainability. A public referral hospital located in the province of San Pedro de Macoris and serving approximately 5,000 births annually, the regional facility now requires that all personnel providing newborn care receive HBB training. Two of the neonatologists at Musa were among the first to be trained in NRP and HBB and have since volunteered their time to facilitate MoH-sponsored HBB trainings. One of MCHIP's implementing hospitals, the facility served as a pioneer in data collection on HBB and early newborn care, and has trained its referral centers in the southeastern region of the country.

Figure 2



5. Key Lessons Learned - Summary of Success Factors

Trained staff have demonstrated their commitment to train their referring facilities. Following the closing of the MCHIP DR country program in January 2014, several training courses have taken place resulting in an additional 200 trained providers. This training was funded in part by the DR MoH, demonstrating a clear transfer of ownership and uptake by the referral hospitals.

The NRP in the DR had been implemented traditionally by an elite group of professionals using the advanced AAP curriculum. In collaboration with LDSC-C, a dedicated group of skilled instructors became the country's first newborn resuscitation champions, many of whom volunteered countless days to teach resuscitation skills to others in their hospitals and regions. MCHIP played a key role in providing equitable access to the acquisition of competencies in newborn resuscitation to many professionals serving in the public health care system and particularly contributed to the empowerment of nurses in the facility setting.

Summary of Challenges

At the time of completion of MCH projects funded by USAID DR in 2014, a solid base for HBB in the DR had been provided. The MoH is determined to implement the program but has faced funding challenges. Given their responsibility to implement the program and to assure high quality of the services, it is critical to have the MoH involved. The DR MoH has played an important role in participants' attendance in HBB training events and with the distribution of equipment, but has not as of yet included HBB as the resuscitation curriculum in the IMNCI norms.

MCHIP previously provided HBB materials and equipment to implementing hospitals; however, there are currently no guidelines in place for procurement of new/replacement materials. Without immediate access to equipment and teaching materials, the likelihood of trained providers to teach others and practice their newly acquired skills is diminished. Practice on a regular basis is required for optimal resuscitation skills acquisition and retention. One recommended option is that simulation be included at the beginning of hospital shifts. Data collection on indicators for basic resuscitation and essential newborn care at birth will continue to generate valuable new information to improve the quality of implementation and retention of skills. Ongoing monitoring and supervision of data collection is needed to ensure timely and accurate information and to make program adjustments accordingly.

It is fundamental that training participants fit the adequate profile, possessing both the ability, personality and backing of their administrators to implement. In the early implementation stage, participants trained by LDSC-C were 40–50% medical residents, who were not in teaching positions for the subsequent two to three years. In the following years of implementation, LDSC-C focused on training teaching instructors who had the capacity to replicate training immediately in their institutions. In the case of training direct providers, it is recommended that at least two from each facility participate, as it is beneficial for encouraging teaching.

6. Next Steps Towards Institutionalization and National Impact

Plans

This year, the MoH is planning two TOT courses in two health service regions: San Pedro de Macoris and Espaillat, in coordination with PAHO, UNICEF, and LDS-C. Also in 2015, the MoH will be working with Mount Sinai, Physicians for Peace, PAHO, UNICEF and LDS-C to implement Essential Care for Every Baby in a pilot study with six hospitals in the Espaillat region, with the goal of implementing a combined HBB and ECEB program nationally in 2016.

Recommendations

- Advocate for HBB training to be a requirement for all health personnel providing newborn care.
- Include HBB as part of the national IMNCI pre- and in-service programs with funding from the MoH and other stakeholders.
- Continue collecting information on the HBB indicators introduced in the DR under MCHIP. Analyze and report related indicators.
- Integrate MoH-led measures of quality to implement improvements on an ongoing basis.
- Develop evaluation to measure the quality of teaching by trained facilitators.
- Conduct refresher training.
- Develop a procurement plan for acquisition of equipment.
- Conduct an assessment to determine amount of equipment needed in each implementing hospital. The UN Commission has developed a quantification tool for newborn resuscitation equipment that can be used for this purpose.
- Advocate for active participation of implementing hospitals in the LAC HBB virtual Community of Practice, created and managed by USAID's ASSIST project, which provides an avenue for health care providers to continue engagement among program implementers at the facility level within the country and across the LAC region.

Figure 3 Hospitals trained in HBB under MCHIP, by Health Services Region

Map No.	Name of Hospital	Province	Name of Health Services Region	Health Services Region
1	San Lorenzo de los Mina	Santo Domingo	Metropolitano	0
2	<u>Teribio Bencosme</u>	<u>Espaillet</u>	<u>Norcentral</u>	2
3	San Vicente de <u>Paúl</u>	San Francisco de <u>Macorís</u>	<u>Nordeste</u>	3
4	<u>Jaime Mota</u>	<u>Barahona</u>	<u>Enriquillo</u>	4
5	Antonio Musa	San Pedro de <u>Macorís</u>	Este	5
6	<u>Teófilo Hernández</u>	<u>El Seibo</u>	Este	5
7	Alejandro Cabral	San Juan de la Maguana	El Valle	6
8	<u>Luis Bogasert</u>	<u>Valverde</u>	<u>Cibao Occidental</u>	7
9	<u>Morillo King</u>	La Vega	<u>Cibao Central</u>	8
10	<u>Inmaculada Concepción</u>	<u>Sánchez Ramírez</u>	<u>Cibao Central</u>	8



HBB training in Dominican Republic

Figure 4 Hospitals and Provinces Trained in HBB, January 2014 – Present

No.	Name of Hospital/ Institution
1	Universidad Autónoma de Santo Domingo
2	<u>Yaguajay (municipio)</u>
3	Hospital Dr. Luis Eduardo <u>Aybar</u>
4	Hospital El Almirante
5	Hospital Dr. <u>Vinicio Calventi</u>
6	Hospital Municipal <u>Cambita</u>
7	Hospital Materno Infantil Villa Mella
8	Hospital General Melenciano
9	<u>Tamayo (municipio)</u>
10	Hospital Central de las Fuerzas Armadas
11	Azua
12	Hospital Regional Taiwan
13	Hospital Dr. Luis E. Aybar
14	Hospital <u>Infantil</u> Dr. Robert Reid Cabral
15	Hospital Materno-Infantil San Lorenzo de los Mina
16	Hospital de Maternidad
17	Hospital Regional Dr. Antonio Musa
18	Hospital Maternidad Nuestra Señora de la Altagracia
19	Hospital Regional Juan Pablo Pina
20	Hospital Nuestra Señora de Regla
21	Los Cacaos (municipio)
22	San José de <u>Ocoa</u> (provincia)
23	<u>Tamaina</u> Valdez
24	Municipio de Villa Altagracia
25	Gerencia de área de salud <u>Peravia</u>
26	Hospital Provincial Monte Plata
27	Hospital Municipal <u>Engombe</u>
28	<u>Bayaguana</u>

Ethiopia Case Study

Dr. Hillena Kebele, Federal Ministry of Health
Dr. Yordanos Molla and Abeba Bekele, Save the Children

1. Background

Systematic analysis of global child mortality from 2000 to 2013 reported 44% of under-five children died in the neonatal period. Preterm birth complications and intrapartum-related complications were two of the three leading causes of death. In addition, a quick mortality decline was recorded among children one to 59 months, while proportion of neonatal mortality in under-five deaths increased from 37.6% to 43.9% in the same 13-year period. The systematic analysis projected the global under-five mortality by the year 2030 will be 32.3 with a neonatal mortality rate (NMR) of 15.5 deaths per 1,000 live birth, which implies 48% of the under-five mortality will be attributable to neonatal causes. Globally, birth asphyxia—which causes 11% of cause-specific child mortality—is projected to remain at 10% in 2030, whereas the proportion will increase from 10% to 12% in sub-Saharan Africa and decrease from 11% to 8% in Southern Asia.

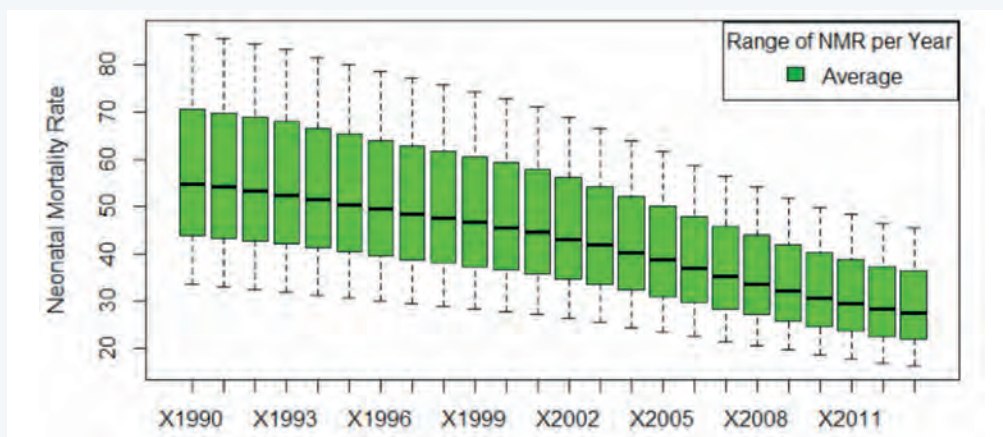


Figure 1: Trend in Neonatal Mortality Rate in Ethiopia from 1990 to 2013 (UNICEF 2014)

In Ethiopia, skilled birth attendance (by a doctor, midwife or nurse) remains very low at 14.5%, according to the 2014 Mini Demographic and Health Survey of Ethiopia. The latest NMR is 28 per 1,000 live births (Central Statistical Agency 2014). Figure 1 and 2 display the trend in NMR from 1990 to 2013 and cause-specific mortality rate within the first 28 days of birth from 2000 to 2013 in Ethiopia (Liu, Oza et al. 2014; UNICEF 2014). Intra-partum related events, which included neonatal asphyxia, are the leading causes of newborn death in Ethiopia. To this effect, the Federal Ministry of Health (FMOH) and partner efforts are geared towards addressing intrapartum neonatal mortality with the introduction and scale-up of evidence-based interventions such as newborn resuscitation and essential newborn care (ENC).

2. Preparation for scale-up

Prior to the introduction of Helping Babies Breathe (HBB) in Ethiopia, there were newborn resuscitation programs such as integrated training of newborn resuscitation into basic emergency obstetric and newborn care (BEmONC). Preference for HBB introduction in Ethiopia was based on its methodological approaches and training content with hands-on practical sessions. HBB was officially launched in Ethiopia in September 2010 under the leadership of the FMOH with support from its implementing partners. From inception, the ministry's strategy for introduction of HBB was through integration with existing in-service training and supportive supervision tools. The government has also shown its commitment in the Health Sector Development Plan (HSDP 2011–2015), which aspires to: "Increase the proportion of asphyxiated newborns who are resuscitated from 7% to 75%" (FMOH 2010).

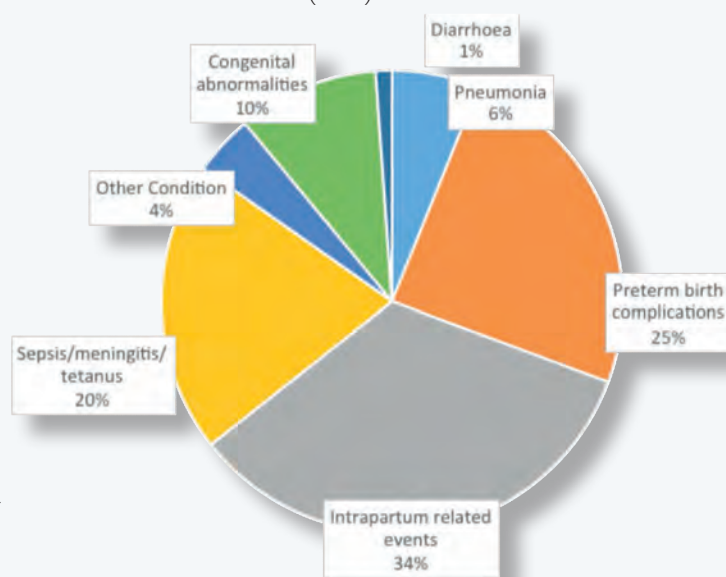


Figure 2: All causes of death 0–27 days in Ethiopia from 2000 to 2013, The Lancet, 2013 (Liu, Oza et al. 2014)

¹ Liu, L., S. Oza, et al. (2014). "Global, regional, and national causes of child mortality in 2000–13, with projections to inform post-2015 priorities: an updated systematic analysis." *The Lancet*.

Key FMOH partners for HBB rollout in Ethiopia included: USAID through its Maternal and Child Health Integrated Program (MCHIP), the United Nations Children's Fund (UNICEF), Save the Children, Jhpiego, American Academy of Pediatrics (AAP), Laerdal and the Ethiopian Pediatric Society (EPS). The partners were involved in advocating for introduction of HBB in the country, as well as supporting program implementation. In collaboration with AAP, Laerdal and MCHIP, UNICEF supported the launch of HBB in 2010 through training of trainers, development of newborn care training manual (which includes essential newborn care, HBB, and kangaroo mother care) with the EPS and FMOH Newborn Technical Working Group, provision of training to mid-level health care providers throughout the country, "orientation" on HBB for Health Extension Workers (HEWs) as part of Integrated Community Case Management (ICCM) training and providing HEWs with Ambu bags and masks with penguin suction. UNICEF was also the main supplier of HBB equipment.

USAID's support through MCHIP during the early years of HBB implementation included: backing FMOH endeavors to integrate HBB in existing maternal, newborn and child health (MNCH) training materials; conducting periodic joint integrated supportive supervision on MNCH activities to health centers and health posts; supporting UNICEF and FMOH in the development, review and finalization of the national newborn care implementation plan; and collaborating with UNICEF to facilitate availability of basic resuscitation equipment at health facilities. MCHIP also accomplished the following: supported EPS to adequately adapt HBB for the resuscitation component of the newborn care training manual; ensured HBB was adequately addressed and adequate practical sessions were made available in BEmONC training packages; trained health workers on HBB as part of the ENC training and as part of BEmONC training; coordinated with UNICEF to provide health facilities with penguin suction, Ambu bag and mask and anatomical simulator NeoNatalie for peer mentoring including HEWs.

During the first year of HBB introduction, from 2010 to 2011, MCHIP sponsored Ethiopian regional representatives to attend the "Africa Regional Meeting on Interventions for Impact in Essential Obstetric and Newborn Care," and an additional 20 Ethiopian participants for a Regional HBB Training of Trainers. Save the Children supported training of health workers on HBB as part of newborn care training, coordinated with UNICEF to provide Ambu bag and mask and penguin suction to health facilities, and supported health facilities with continuous supportive supervision. EPS played a pivotal role in developing the newborn care training manual with the FMOH; integrating HBB into existing MNCH training materials; and leading the pilot and scale-up phase of newborn care training. In collaboration with FMOH, UNICEF is responsible for the procurement and distribution of equipment through Pharmaceutical Fund and Supply Agency. All new-

born resuscitation equipment is imported and the brand made by Laerdal is uniformly used in Ethiopia. Laerdal and AAP supported the launching of HBB in Ethiopia and Laerdal donated HBB Facilitators Training materials at the launch. Other partners involved included Integrated Family Health Program (IFHP), Last Ten Kilometers Project (L10K), IntraHealth International and the Maternal and Newborn Health in Ethiopia Partnership (MaNHEP).

The in-service training packages that were selected to equip providers with basic skills on HBB included: BEmONC, ICCM, Integrated Management of Neonatal and Childhood Illness (IMNCI), prevention of mother-to-child transmission of HIV (PMTCT) and clean and safe delivery. In addition, the three-day training curriculum on ENC focused on birth asphyxia, prematurity, newborn infection, routine intra-partum and postnatal newborn care. This ENC training was the main platform for introduction and scale-up of HBB in Ethiopia in general, and in MCHIP-supported areas in particular. EPS did an adaptation of HBB in the three-day newborn care training manual, which contains all components of the stand-alone HBB training. The five-day ICCM training allocates one-and-a-half days for newborn care in general and few hours on newborn resuscitation. The anatomical model NeoNatalie, which is used for hands-on providers training on HBB, is left in training rooms throughout ICCM training days. It should be noted that ICCM targets community service providers (HEWs) whose role in attending delivery remains has been stopped under the FMOH's new policy that all pregnancies should be attended by skilled attendants and the provision of clean and safe delivery training to HEWs has also been stopped. Similarly, IMNCI has a newborn resuscitation component, where the emphasis on the skills section of the training varies across implementing partners.

3. Implementation

As described in the preparatory phase above, implementation of HBB in Ethiopia was mainly through in-service training integrated within existing relevant MNCH activities. Ethiopia planned to train two providers from each of 3,525 health centers and four providers from each of 180 hospitals (thus targeting a total of 7,770 targeted health providers from 3,705 health facilities). Various organizations committed to supporting different components of the rollout and actual implementation in assigned geographic areas. MCHIP supported HBB as part of an integrated package with newborn care in the four major regions of SNNPR, Amhara, Oromia and Tigray and UNICEF supported EPS to roll out this package in all nine regions.

Newborn care training, which is provided to midwives, nurses, health officers and doctors by FMOH through EPS, was initially piloted in 100 health facilities (50 hospital and 50 health centers). UNICEF reported training and

² UNICEF. (2014). "UNICEF Data: Monitoring the Situation of Children and Women," from <http://data.unicef.org/child-mortality/neonatal>

equipping staff of 2,050 health centers and 50 hospitals (4,300 providers). Each facility received supplies of two resuscitation bag-masks, two suction devices, one newborn registration book and one flip chart. In addition, more than 50 NeoNatalies were provided for training. Some private health services providers and members of health science teaching institutions have also received the newborn care training. MCHIP trained 80 health workers on HBB as part of BEmONC and equipped 73 health facilities (seven hospitals and 66 health centers in the four regions).

Thus, FMOH and partners have trained about 4,380 health providers (from 2,116 health centers and 57 hospitals) and have equipped 2,173 health facilities (2,116 health centers and 57 hospitals). Staff from a little over 1,500 health centers and 130 hospital remain to be trained. Thus, FMOH and partners has increased facility readiness by training 56 percent of health providers and equipping 59 percent of health centers and hospitals. However, access is limited to 8 percent since coverage of institutional delivery is just 15 percent, according to the 2014 Mini Demographic Health Survey. If one considers the higher coverage of skilled birth attendance (41%) reported in the government's 2014 Annual Performance Report, access to newborn resuscitation would be estimated at 23 percent.

In the 2013 MCHIP program report, a newborn register developed by EPS showed a total of 2,090 asphyxiated babies were successfully resuscitated from a total of 43,393 deliveries in 116 health facilities by health workers. EPS follows and assesses trained service providers' competencies. Preliminary analysis of a comparative baseline and endline assessment revealed a comprehensive percentage increase in resuscitation skills of all groups of trainees that included general practitioners, nurses, midwives and health officers. In addition, assessment of 60 health facilities in one month with 8,080 deliveries reported. A total of 453 (5.6%) were still births; out of the 212 (2.6%) babies who were not breathing at birth and required resuscitation, 180 (84.9%) survived after resuscitation. In 2011, MCHIP received a technical assistance visit from Johns Hopkins University to assess the potential for a program performance evaluation of the national rollout of HBB in Ethiopia. Discussions with the FMOH, USAID, UNICEF, EPS, IFHP and Addis Ababa University reached a consensus that the performance evaluation of HBB is useful but needs to be considered within the context of the national comprehensive newborn care plan and not as a separate evaluation. However, a national evaluation of HBB has not yet been done integrated with ECN or separately. EPS has developed a register that contains indicators such as "number of babies requiring resuscitation, number of resuscitated babies that survived and number of resuscitated babies that died after resuscitation." MCHIP collected birth asphyxia information from a newborn register distributed to health facilities through

EPS and from the comments section of health management information system (HMIS) registers. The referral system for newborn resuscitation varies at different levels of care; and babies that do not breathe after 10 minutes of resuscitation would be declared dead.

4. Institutionalization

Newborn resuscitation activities in Ethiopia are led by the FMOH in close collaboration with partners. Although resuscitation-related data was included in the ENC register, no specific resuscitation indicator(s) were incorporated into the national HMIS, making it difficult to track the performance of the HBB program. Later, through advocacy from MCHIP and other partners, a select number of key newborn care indicators (including "number of babies asphyxiated at birth and those that were successfully resuscitated") were added to the HMIS through the National Child Survival Technical Working Group.

5. Key lessons learned and next steps towards institutionalization and national impact

Ethiopian government commitment and leadership from the inception of HBB has facilitated coordinated effort of partners with similar vision. HBB is sustainable because of its integration as demonstrated by ongoing training through existing and new donor-supported or government-supported projects. Most importantly, integration of HBB training in existing MNCH training has also helped quick rollout of HBB nationwide. UNICEF's support to make resuscitation equipment available facilitated implementation of HBB following each training.

At present, HBB is integrated into in-service training, and pre-service education in HBB is limited to Jhpiego's selected midwifery schools with skills labs for newborn resuscitation. In addition, iCCM pregraduation training is included in the HEW program. Therefore, there is a gap in integrating newborn resuscitation into pre-service education curricula for nurses, health officers and physicians. In addition, effectiveness of integrated newborn resuscitation training, particularly on gain and retention of critical resuscitation skills, needs to be assessed thoroughly.

Partners working on newborn resuscitation acknowledge that lower rates of institutional delivery coupled with high turnover of trained health professionals continue to be bottlenecks for high-impact newborn resuscitation efforts in Ethiopia. The FMOH has a "no home delivery" initiative and the practical role of HEWs on attending delivery varies across different parts of the country. Therefore, reaching asphyxiated babies by equipping and training HEWs on HBB integrated within iCCM, which was not executed uniformly in all regions of the country, will have a less significant effect. Newborn resuscitation implementation in Ethiopia will have more impact as the government and its implementing partners work to increase institutional

³ Central Statistical Agency (2014). *Ethiopia Mini Demographic and Health Survey*. Addis Ababa, Ethiopia.

⁴ *Health Sector Development Programme IV, Annual Performance Report, EFY 2006 (2013/14)*. Federal Ministry of Health, Ethiopia



When baby Jonas was born, he didn't breathe. Having a midwife at his bed, trained on HBB, saved his life. Yekatit 12 Hospital, Addis Ababa.

deliveries through its various interventions including the provision of transportation for women in labor.

Newborn resuscitation related information is recorded on a register EPS developed in collaboration with the FMOH. This challenges regular monitoring and evaluation of newborn resuscitation implementation impact in Ethiopia. MCHIP and other partners, including IFHP, are fostering newborn resuscitation activities in the four major regions in Ethiopia, although not all facilities in these four regions are covered.

References:

Central Statistical Agency (2014). Ethiopia Mini Demographic and Health Survey. Addis Ababa, Ethiopia.

Federal Democratic Republic of Ethiopia Ministry of Health (FMOH) (2010). Health Sector Development Program IV 2010/11 – 2014/15 Addis Ababa, Ethiopia.

Liu, L., S. Oza, et al. (2014). "Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis." *The Lancet*.

UNICEF. (2014). "UNICEF Data: Monitoring the Situation of Children and Women," from <http://data.unicef.org/child-mortality/neonatal>.

Ghana Case Study

Dr. Magdalena Serpa (PATH), Martha Serwah Appiagyei (Jhpiego) Dr. Mame Yaa Nyarko (Pediatric Society of Ghana), Dr. Priscilla Wobil (MCI and KATH), Dr. Ike Ferguson (LDS Charities), Dr. Lloyd Jensen (LDS Charities), Patricia Kelly, RN (Project C.U.R.E.), Dr. Isabella Sagoe-Moses (Ghana Health Services), Dr. Goldy Mazia (PATH), Dr. Amanua Chinbuah (PATH), Patience Cofie (PATH).

1. Country statistics

With a neonatal mortality rate of 32/1,000 live births in 2011, Ghana's National Newborn Health Strategy and Action Plan 2014–2018 aims toward a reduction to 21/1,000 live births by 2018. The Newborn Strategy and Action Plan is in accordance with global newborn guiding principles and objectives of the Every Newborn Action Plan. The primary causes of newborn deaths in Ghana are pre-term complications (36%), intrapartum-related deaths (28%) and infections (25%). Skilled assistance at delivery increased from 44% in 1993 to 68.4% in 2011. Ghana aims to achieve 82% skilled assistance at delivery by 2018.

2. Preparation for HBB scale-up

Visiting groups have brought diverse resuscitation practices and curricula to Ghana over the last two decades. For the Helping Babies Breathe (HBB) neonatal resuscitation program, specifically, Ghana has welcomed Columbia University/Millennium Cities Initiative (MCI); The Church of Jesus Christ Latter-day Saints Charities (LDSC) /Pediatric Society of Ghana; Children's Investment Fund Foundation (CIFF)/PATH (Making Every Baby Count Initiative [MEBCI]); the Bill & Melinda Gates Foundation/Institute for Healthcare Improvement (IHI)-Jhpiego (Project Fives Alive); Ghana Medical Help; Israel's Agency for International Development (MASHAV); Johnson & Johnson; Johns Hopkins University; Liverpool School of Tropical Medicine; Newmont Mines/Commission on Urgent Relief and Equipment (C.U.R.E.); U.S. Agency for International Development (USAID)/Jhpiego Maternal and Child Health Integrated Program (MCHIP) and Maternal and Child Survival Program (MCSP) and USAID/JSI FOCUS Project; United Nations Development Program (UNDP) Millennium Development Goal Acceleration Framework (MAF)-Ghana, and others, including private companies and private citizens. This multiplicity, and to some extent, ad hoc partner involvement, started in 2010. These efforts are seen as positive by the Ghana Health Service (GHS), but make it difficult to document Ghana's HBB trajectory. Initial coordination was uneven, and partners got involved with different areas of the government—areas not routinely communicating among themselves. The early implementation approach did not include clear plans for scale-up. More recently, GHS, with support from PATH/MEBCI and other partners, has assumed a purposeful planning role for future scale-up.

3. Implementation

There was no official stakeholder meeting to kickoff HBB in Ghana. The interesting, albeit not uniform, implementation is briefly summarized below.

HBB and MCI (Columbia University). Two Ghanaian pediatricians sponsored by MCI attended the Washington, DC, 2010 HBB workshop. MCI conducted a pilot, training four additional Ghanaian physicians as master trainers, and in turn these taught 116 nurses/midwives. The pilot was supported by the Ministry of Health (MOH), GHS and the Accra and Kumasi Metropolitan Health Directories. Training was carried out in two hospitals, Suntreso Hospital in Kumasi, home to one of two Israeli-built neonatal units, and Ussher Hospital in Accra. Of 2,004 live births at the two hospitals, 68 newborns were successfully resuscitated—a 3.4 % increase in the number of babies surviving. Between 2012 to 2013 over 610 nurses/midwives were trained within and outside the Kumasi metropolis. In 2014, 300 more midwives were trained from five district hospitals within the Kumasi Metropolis and nine of them were selected as master trainers.

HBB and Ghana's Government Leadership. The MOH and GHS have played a leadership role both in policy and implementation of HBB. In 2011, at a meeting in the MOH chaired by the Human Resource Director, Dr. Appiah-Denkyira current GHS Director General, two crucial decisions were made: 1) to use HBB as a country model to improve newborn resuscitation nationwide, and 2) to recommend that facilities providing maternity services should not only be trained but also be provided with the sets for regular refresher and in-service training. The decision has been ratified, including requesting that HBB was used by new projects like MEBCI (see below HBB/MEBCI). Additionally, since November 2011 until midyear 2014, and as part of the training on the utilization of Ghana's Guide for Maternal and Newborn Care (job aids), half-day trainings utilizing an HBB approach were conducted. The trainings are not "pure" HBB per se but some of the key HBB elements are used (e.g., Action Plan and practice using the NeoNatalie mannequin).

HBB and MCHIP (Jhpiego) (USAID). In 2011, MCHIP, in collaboration with the Nursing and Midwifery Council of Ghana and the Human Resource Directorate of the MOH through the midwifery training institutions, conducted capacity building workshops on basic emergency obstetric and newborn care, including HBB. During MCHIP, a total of 35 midwifery tutors and 53 precep-

¹ UNICEF, *State of the World's Children*, 2012; UN Inter-agency Group for Child Mortality Estimation, 2012.

² Ghanaian pediatricians have been certified in HBB in other countries.

tors were trained in Kumasi and Tema. Each midwifery school received models and full sets of training materials. In all, 208 models were distributed. In addition, MCHIP advocated and was successful in obtaining the integration of HBB into the midwifery curriculum. Under MCSF, the follow-on project to MCHIP, eLearning modules will be developed and uploaded for both student and tutor use and actions to improve quality of implementation and retention of skills (e.g., supervision and monitoring; low-dose, high-frequency training/practice in monthly meetings; other quality improvement processes.) are planned.

HBB in Project Fives Alive (Institute for Healthcare Improvement [IHI] and Jhpiego) (Gates Foundation).

In a new partnership with Project Fives Alive! funded by Gates Foundation, Jhpiego is targeting 42 hospitals in three regions. This project trains integrated service delivery teams in their facilities using a new "low-dose, high-frequency" approach. The training package is more extensive than only HBB and includes managing labor, delivery and the immediate postpartum period in addition to newborn care. To date, 108 providers have been trained in 11 facilities across Western, Central and Upper West Regions and the remainder will be reached by early 2016. Both the MamaNatalie and the NeoNatalie are provided for practice sessions in each facility and are supported by facility-based clinical mentors. Providers have been encouraged to do one practice session a week and mentors to call at least once a month. Service statistics are being recorded in a supplementary register including information such as the number of babies born not breathing nor crying at birth, babies resuscitated and babies placed skin to skin.

HBB and LDSC. One Ghanaian pediatrician sponsored by LDSC attended the Washington, DC, 2010 HBB workshop. LDSC has worked in partnership with the Ghana Health Service since 2002 using the Neonatal Resuscitation Program for both physicians and nurse/midwives, having trained in all 10 regions of the country. Between August 2010 and May 2014, three HBB training of trainers occurred, two of them in Volta Region with GHS, and one in Greater Accra Region with the Pediatric Society of Ghana. According to data provided by LDSC, 246 health professionals were trained as HBB trainers since 2011. During the six months after each training, an additional 3530 health professionals were trained in HBB. According to data provided by the Pediatric Society of Ghana, a total of 88 people were trained as service providers and 89 were trained as master trainers between 2014 and February 2015. Trainees include general physicians, pediatricians, nurses, midwives and pediatric nursing students. LDSC provided each trainee with equipment. A total of 250 training kits have been distributed and an additional 900 sets of resuscitation kits that include Ambu bag, suction device and stethoscope were provided for clinical use.

HBB and Focus Region Health Project (FRHP) (USAID)

The Focus Region Health Project was a four-and-a-half-year integrated maternal, newborn and child health, family planning and HIV/AIDS project that ended in 2014. HBB was taught as part of Life Saving Skills and Emergency Obstetric and Neonatal Care in Central and Western Regions and Greater Accra. Nearly 600 midwives, 60 of whom were from the private sector, were trained under this program. This project also assisted the GHS to address focal areas by conducting training for providers who were assessed and found lacking in the use of the partograph, neonatal resuscitation, active management of the third stage of labor and focused antenatal care. This training responded to skill gaps supervisors found among their staff, and around 400 service providers received these special training sessions.

HBB and UNDP MDG Acceleration Framework (MAF).

The Ghana College of Nurses and Midwives, through the Health Training Institutions Unit of the Human Resource Directorate of the MOH, conducted two 12-day capacity building workshops on basic emergency obstetric and newborn care for 80 midwives teaching in nursing and midwifery schools and their preceptors. Participants were also assigned to clinical sites. Clinical training was carried out at Ridge Government Hospital, Achimota Hospital and La General Hospital.

HBB in Project C.U.R.E. (Newmont Gold). Three training courses took place in Eastern and Brong-Ahafo regions, with 41 providers trained in Eastern Region and six master trainers selected by the district health nurse and the lead trainer from this group. Six training kits were donated. In Brong-Ahafo, at the request of the wife of the Vice President of Ghana, 13 midwives were trained as master trainers (Sunyani district) and four received training kits. In Brong-Ahafo, 11 midwives were trained, six became master trainers, and three training kits were donated. Although there were midwives who would have been great teachers, they worked alone in remote areas, with no one to teach. For good master trainers who did not receive equipment, the lead trainer arranged for them to work with those who did receive equipment.

HBB in Making Every Baby Count Initiative (PATH)

(CIFF). PATH has supported the development of national newborn health policy, curricula, training and data management systems, and HBB is part of the intervention. Using a stepwise implementation approach, it is supporting Brong-Ahafo, Eastern, Volta and Ashanti Regions and is planning to cover 100% of the districts in each one of these regions. It has provided important inputs to procurement of commodities, data collection, development of supervision tools, and coordination and implementation of training sessions. Service statistics are being recorded and as part of a national effort to modify the national labor register, a pilot to test a modified labor room register will be conducted. PATH ignited the

³ Based on the pilot's findings, Johnson & Johnson funded a similar program in Ethiopia.

⁴ Information kindly provided by Jhpiego, Ghana.

reactivation of Ghana's Subcommittee on Newborn Care, where GHS and partners share a common platform to discuss and coordinate newborn policy and implementation. The five-day curriculum, implemented by GHS with PATH's support, comprises two days of HBB, two days of Essential Care for Every Baby (ECEB) and one day of infection prevention. The training courses are carefully planned and systematically implemented and monitored. Between October 2014 and February 2015, 29 national master trainers, 24 regional master trainers and 34 providers were trained. In addition, PATH-MEBCI played a central role in requesting, proposing and getting approval for the modification of labor room registers to include ECEB/HBB indicators as a national initiative. The new register pilot-testing will be conducted in conjunction with GHS. Other projects (e.g., MCHIP and MCSP) keep parallel labor registers that include some HBB indicators in Upper West, Western and Central region. PATH also provided support to GHS in the identification of newborn health indicators, jointly selecting a subset from the National Newborn Health Strategy that will be integrated into the District Health Information Management System (DHIMS 2) in the future. PATH also proposed a supervisory tool (adapted from the Tanzania tool developed by Mass General), modifying it to add ECEB and infection prevention variables. GHS is proposing to use the supervisory tool nationally.

4. Institutionalization

To improve institutionalization of overall newborn curricula, including but not limited to HBB, going forward, partners will focus on the Ghana National Newborn Health Strategy and Action Plan 2014–2018. Management of adverse intrapartum events (including birth asphyxia) is one of the key areas of newborn care included in the national policy.

PATH has encouraged GHS to select one newborn liaison person in each region of the country, a step which is already facilitating a more uniform approach to the newborn nationally.

HBB is integrated with essential newborn care and with emergency obstetric care. The PATH/GHS five-day newborn health curricula (two days HBB, two days ECEB, and one day of infection prevention) is a model being implemented in four regions. GHS is closely involved with this model and hopes to institutionalize it nationally. Using the Newborn Subcommittee as a platform, the government's role as a champion in coordinating and providing guidance to regions and districts on the implementation of HBB will continue to be strengthened.

- Funders exert different degrees of influence at different periods in time, but they have all facilitated the country's exposure to HBB.
- GHS and some of the implementing partners are currently discussing how to centralize and improve coordination for monitoring purposes and for future scale-up.
- The originally donor-driven funding has evolved and is a mix of donor funding (covering technical assistance, training costs and equipment costs) and government funding (supporting coordination at the regional level, freeing staff time to participate in trainings). Nevertheless, government budgetary constraints will not allow replacing donor funding in the short run.
- During the rollout of low-dose, high-frequency and other training, the Fives Alive and C.U.R.E. projects identified sites having very limited numbers of midwives providing labor, delivery and postpartum care. In these sites, a combination of general nurses, enrolled nurses and assistants supported midwives to provide care to clients. Many of the key skills and competencies that the low-dose, high-frequency training focuses on are outside of their defined scopes of practice; therefore, this low-dose, high-frequency training needs to be adapted to their scopes of practice.
- The availability of basic and essential equipment, instruments and drugs varies. Further follow-up with the Family Health Division is needed to determine what was procured for each region and where this is in the distribution process. Regarding HBB equipment specifically, it is difficult to assess whether all facilities are equipped with bag and masks, and at this stage it is difficult to assess whether there are sufficient supplies for the programs. Partners are using different methods to establish this. For example, PATH is conducting a facility assessment and is using a PATH-developed quantification tool to determine needs of basic resuscitation equipment for service provision. LDSC and the Pediatric Society of Ghana relied upon verbal estimates from participants which may not be very accurate.
- In general, partners are providing Laerdal training equipment, but purchasing and distribution methods are not unified. HBB materials were procured from Laerdal by Jhpiego under MCHIP and the Fives Alive project, and by PATH for MEBCI and by LDSC for the Pediatric Society of Ghana.
- Jhpiego and PATH have been particularly careful in ensuring clear and orderly equipment distribution methods. At least one partner referred to insufficient availability of HBB training kits.
- Training methods, duration and intervals vary among different partners, and this can represent a challenge when analyzing results. Some partners (Jhpiego and PATH) have seen the need to train health information officers to improve data collection.

⁵ <http://www.mormonnewsroom.com.gh/article/saving-infant-lives-in-ghana>

⁶ Source: Final Report USAID Focus Region Health Project

<http://www.jsi.com/JSIInternet/Resources/publication/display.cfm?txtGeoArea=INTL&id=14529&thisSection=Resources>

⁷ Source: Dr. Jemima Dennis, January 2014, GCMN Report on Basic Emergency Obstetric and Newborn Care (accessed on line).



HBB training in Ghana

- The degree of involvement of maternity and newborn unit staff involved in monitoring and data collection varies, but Jhpiego and PATH are leading these efforts in their respective areas of influence.
- Supervision of the provision of HBB services is not uniform and varies among partners. Objective structured clinical examinations (OSCEs) are being conducted as part of supervision by some, but not all.

Highlights

Notable achievements include:

- The USAID-funded MCHIP project, implemented by Jhpiego, as it achieved HBB integration into the midwifery curriculum.
- MCHIP, MAF and PATH's inclusion of midwifery tutors to help train midwives, and the future availability of eLearning modules (Jhpiego), which, when developed, can be used both in pre-service and in-service.
- LDSC's involvement with the Pediatric Society of Ghana where the society has taken ownership of the training and reporting of training.
- PATH's MEBCL systematic and rapid integrated approach, pioneering a five-day model including HBB, ECEB and infection prevention, which is already reaching district-level providers. PATH/GHS are aiming at 100% coverage of districts in four regions.

5. Next steps towards institutionalization and national impact: plans and recommendations

- PATH is promoting HBB and ECEB introduction into the pre-service curriculum for medical students.
- GHS will need to advocate for the budget to sustain gains and expand HBB.
- Budget for refresher training will have to be factored in by the government.
- GHS is adopting the PATH-MEBCL supervision tool and hopefully it will be adapted nationally with time.
- Once the modified labor registry is adopted nationally and the quality of selected newborn- specific indicators included in the national Health Information Management System is tested, measurement of impact will become easier.

⁸ The Subcommittee on Newborn Care and other scenarios are being utilized by PATH to influence the planning of 2015 National Health Summit aiming at the inclusion of high-priority newborn health issues.

India Case Study #1: MCHIP

Anju Puri (Save the Children)¹

1. Introduction

With the launch of Janani Suraksha Yojana (JSY, a cash incentive-based program to encourage institutional births) in 2005, the delivery load at government health facilities has increased manifold. The year 2009 saw introduction of the Helping Babies Breathe (HBB) initiative under the National Shishu Sureksha Karyakaram (NSSK) program. The introduction of HBB was spear-headed by the Ministry of Health and Family Welfare (MOHFW), Indian Academy of Pediatrics (IAP) and All India Institute of Medical Sciences (AIIMS). Under the leadership of the MOHFW, in collaboration with IAP, 240 Master Trainers were trained who further cascaded the training to create 1,500 additional trainers at the state/sub-state level in 10 states. The NSSK training was a two-day training using structured methodology and course curricula. These trainers are expected in turn to train medical officers and health providers at the facility level in the districts.

In 2010, the USAID-funded Maternal and Child Health Integrated Program (MCHIP) in India initiated its support to the MOHFW, state health departments of Uttar Pradesh and Jharkhand, to strengthen and expand access to HBB, a basic newborn resuscitation technique, under NSSK. Support to these states was provided to scale-up the training. Catalytically, MCHIP retrained on priority additional state master trainers, since the majority of the earlier master trainers included private pediatricians who were often not available to support the State Health authorities to conduct these trainings at district levels. In addition, MCHIP monitored and observed the uptake of neonatal resuscitation services at the facility level and delivery by the trained health workers. Broadly, both coverage and quality was found lacking at three program areas summarized below (Box 1).

BOX 1: Reasons Attributing In Low Performance By Providers Trained In Nssk Training

1. The structure or the type of the facility, representing its readiness of the settings where delivery and newborn care was being delivered;
2. The process or the pattern of existing practices being followed; and
3. Overall outcome of the care services on the status of the newborns being delivered by the trained providers.

Following gap analyses, several program elements and supporting inputs were developed and implemented both at the district and the priority facilities levels under the leadership of the National Health Mission (NHM).

The key program components included the following:

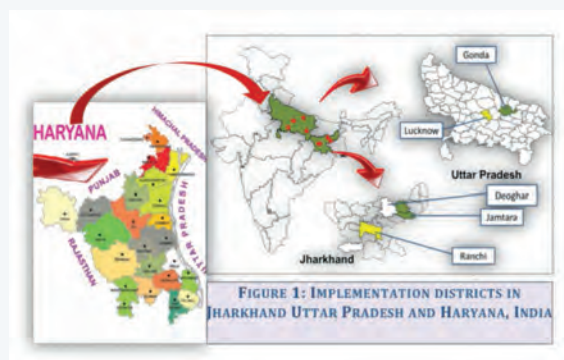
- **Facility readiness assessment** using eight parameters through a structured questionnaire and analysis of 75 indicators, as well as a mapping of knowledge, attitudes and practices on maternal and newborn care, especially neonatal resuscitation. Findings from the assessment were used to prioritize facilities for corrective actions, supportive supervision and mentoring.
- **Three-day, skills-based training in essential newborn care and resuscitation** followed by two days of supportive supervision training of medical officers/nursing staff to conduct structured supervision, supported by the job mentoring, peer learning, use of job aids for district-level primary providers. In addition, skills labs were established at the facilities.
- **Strengthening of health information systems**, including recording and reporting at the facilities and follow-up of facility births of birth asphyxiated newborns in the community for program action.

2. State response

The key to program implementation was involvement of both state and district authorities at each step of implementation.

Initially, the quality improvement of NSSK training to develop and implement the Essential Newborn Care and Resuscitation Program [ENC/R] focused on five districts. These districts were selected for intense implementation to improve the quality of neonatal resuscitation services at the facility level in two states of Jharkhand and Uttar Pradesh.

Based on the success of the ENC/R program inputs in Jharkhand, NHM Haryana with support of MCHIP scaled up in all 21 districts.



¹ Currently at WHO/India

² Upon field visits to the facilities, observations and interrogation, clear gap of quality improvement at all levels, including the quality of district-level training to actual use of the skill by the medical officer and trained health provider were highlighted.

TABLE 1: Three States Key Relevant Information On The Enc/R Program

S. No	State	Total Population (in million)	Number of districts covered	Number of blocks covered	Number of Health facilities covered
1.	Jharkhand	1.78	2	12	41
2.	Uttar Pradesh	8.22	2	24	65
3.	Haryana	25.31	21	119	700
Total	3	35.31	25	155	806

KEY RESULTS

A. Assessment results using the Facility Readiness Tool are depicted in the table below, which summarizes the results of independent assessments at the beginning and end of the timeframe. In addition, intermediate assessments were also carried by government and project staff.

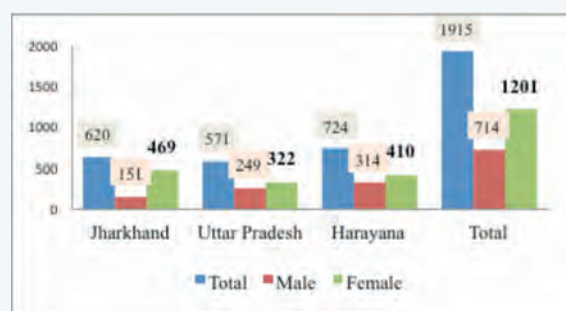
FIGURE 2:

State Improvement Score Card For 3 States Based On Facility Assessment Using Facility Readiness Tool For Enc/R Pre & Post Program Inputs.

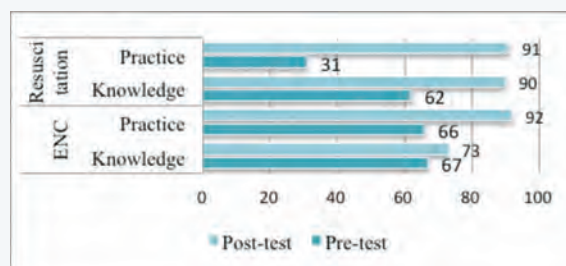
Total Number of Facilities N= 806		Jharkhand		Uttar Pradesh		Haryana	
		Total no of implementation Years 3		Total no of implementation Years 3		Total no of implementation Years 2	
Facility readiness parameter		Baseline	Endline	Baseline	Endline	Baseline	Endline
1	Infrastructure	32	62	54	82	69	68
2	Delivery and Newborn Care services	22	80	58	79	71	81
3	Human resource	52	68	32	60	62	80
4	Essential drugs, equipment and supply	18	82	76	85	56	66
5	Register and client case record	22	96	32	81	42	64
6	Protocols and guidelines	0	100	83	90	32	80
7	Universal precautions & infection prevention	26	90	10	65	35	52
8	Provider's knowledge & competency on core skills	37	88	45	69	44	58
Code	Overall Score	26	83	49	76	51	69
		Non Achiever		Partial Achiever		Achiever	
		< 50 or less		50-79		80 and above	

B. Skills-based training and structured supportive supervision using standard methodology and checklist

- The pedagogy of the NSSK training package was revised to teach basic essential care first, followed by neonatal resuscitation
 - HBB protocol translated in Hindi and use of the poster during training
 - More emphasis on hands-on training with additional demonstration skills such as use of radiant warmer
 - On-the-job training, peer learning using job aids and NeoNatalie
- Seven master training courses conducted in three states
 - A total of 1,915 health providers were trained in three-day ENC/R course, with 62.7% of these female health providers including staff nurses



Graph 1 Health Providers Trained In Hbb Using Enc/R (Three-Day) Training



Graph 2 Pre- And Post-Test Scores (N=1915)

³ These parameters are: Infrastructure; Delivery and newborn care services; Human resources; Essential drugs, equipment and supply; Register and client case record; Protocols and guidelines, universal precautions and infection prevention; and Provider's knowledge and competency on core skills.

⁴ Skills labs included dedicated space in the facility equipped with essential job aids, baby mannequin [NeoNatalie] in the high-delivery-load facilities.

⁵ Supportive supervision involved both quantitative and qualitative checklists used for on-going support.

⁶ Implementation period (~ 3 years) October 2010-June 2013

⁷ Implementation period (~2 years) March 2013-December 2014

TABLE 2: Facility Record 1

States	Total registered	Total deliveries	Total Live births	Percent live births	Total Stillbirths	Total Neonatal Deaths	Facility Stillbirth rate per 1,000 LB	Facility Neonatal death rate per 1,000 LB
Jharkhand	77,875	74,760	68,779	92	6,752	78	89.4	1.13
Uttar Pradesh	388,395	349,555	225,086	93	23,353	283	67	1.26
Haryana	8,929,368	848,289	839,807	99	5,671	4,444	6.7	5.29
	9,395,638	1,272,604	1,133,672	96.9	35,776	4,827	28.2	4.26

C.Strengthening of health information systems

Recording and reporting mechanisms were established at the facility using record registers. At high delivery points, the data entry was compiled weekly and the same was submitted. The following table shows the cumulative facility births captured in 308 facilities over a period of three years of program implementation. The table has excluded either missed reporting and/or incomplete data which was approximately 9.3% of the data.

TABLE 3: facility record 2

States	Total Live births	No of newborns not crying at birth or breathing	Percent birth asphyxia (BA)	No of BA neonates: meconium aspiration syndrome (MAS)	Percent BA newborns with MAS	No of BA neonates with floppiness	Percent BA newborns with floppiness	No of BA neonates resuscitated by stimulation only	Percent BA newborns resuscitated by stimulation	No of BA neonates resuscitated by stimulation and suction only	Percent of BA neonates resuscitated by stimulation and suction only	No of BA neonates resuscitated by stimulation, suction and bag and mask only	Percent of BA neonates resuscitated by stimulation, suction and bag and mask only	No of BA neonates resuscitated by stimulation, suction and bag and mask and oxygen only	Percent of BA neonates resuscitated by stimulation, suction and bag and mask and oxygen only
Jharkhand	68,779	5,296	7.70	3,509	66.26	2,000	37.76	1,475	27.85	1,323	24.98	1,888	35.6	303	5.72
Uttar Pradesh	225,086	41,286	18.34	26,567	64.35	16,508	39.98	4,438	10.80	14,675	35.54	19,103	46.3	765	1.85
Haryana	839,807	58,913	7.02	40,896	69.42	23,417	39.75	3,998	6.79	11,873	20.15	14,628	24.8	9,304	15.79
	1,133,672	105,495	9.31	70,972	67.28	41,925	39.74	9,931	9.41	27,871	26.42	35,619	33.8	10,372	9.83

4. National response and institutionalization

- ENC/R is the key strategy in India's Reproductive, Maternal, Newborn, Child, and Adolescent Health Strategy.
- NSSK training is part of capacity building for all medical officers, nursing staff and auxiliary nurse midwives.
- The supportive supervision used under the MCHIP is now being scaled up to 184 high priority states of India.
- The HBB curriculum is part of the updated skilled birth attendant training guidelines in India.
- The HBB curriculum is also part of the pre-service curricula for auxiliary nurse midwives in nursing schools.

India Case Study #2

Dr. Panna Choudhary, Dr Vineet Saxena, Dr. Rhishikesh Thakre,
Dr. Naveen Thacker, (Indian Academy of Pediatrics, Newborn Resuscitation Program
under the First Golden Minute (NRP-FGM) Office)

1. Country statistics

Neonatal mortality rate (NMR): In 2012, the NMR for India was 25/1000 live births (LB) (Urban: 33/1000 LB, Rural: 16/1000 LB) (SRS 2012 Statistical Report). Neonatal mortality has been reduced much less than post-neonatal deaths, thereby increasing the contribution of neonatal deaths from 41% of under-5 deaths in 1990 to 56% in 2012. During the last 12 year period (2000–2012), the average annual rate of reduction for the NMR has been 3.4% per year. In India, about 0.76 million newborns died in 2012—45% of these deaths occurred in first week of the newborn period. In the same year, India accounted for 0.54 million stillbirths. (1)

Skilled birth attendance: In 2012, there were more than 25 million births in India, of which 38% were delivered at a health facility and 46% were attended by a skilled healthcare provider.

Causes of newborn death: The major causes of newborn deaths (see Figure 1) in India are pre-maturity/preterm (35%), neonatal infections (33%), intra-partum related complications/birth asphyxia (20%) and congenital malformations (9%). (2)

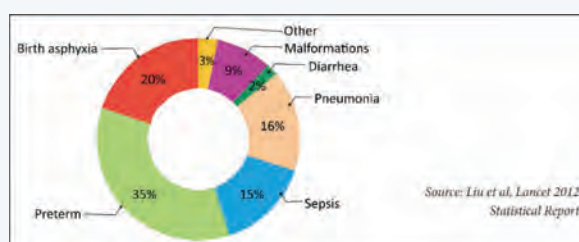


Figure 1

2. Preparation for scale-up

- Was there a newborn resuscitation program already in the country prior to the introduction of Helping Babies Breathe (HBB)? If so, why did the country decide to implement HBB?

Until 2010, there was no newborn resuscitation program (NRP) in the public sector in India. The National Neonatology Forum in the 1990s created a national faculty of 150 pediatricians and nurses for NRP by conducting certification courses in various regions of the country. The certified faculty members in turn trained 12,000 health care professionals in various parts of India (3). In 2009, leadership of Indian

Academy of Pediatrics (IAP) recognized the importance of NRP considering the high neonatal mortality and stillbirth rates due to birth asphyxia, as well as the need to scale up NRP so that a birth attendant trained in NRP would be present for every delivery. The IAP started NRP under First Golden Minute Project (NRP-FGM) in collaboration with AAP and Latter-Day Saint Charities (LDSC) with an ambitious target to train 200,000 health professionals attending births in five years (4). IAP also had several meetings with Ministry of Health and Family Welfare (MOHFW) for introduction of NRP into the public sector. Recognizing the importance of NRP, on 15 September 2009 the MOHFW launched NRP under Navajaat Shishu Suraksha Karyakram (NSSK) with technical and training support from IAP in 10 high-priority states of India.

- Policy and strategy development (was there a stakeholder meeting or a meeting of experts to discuss and reach a consensus on HBB as a national program and to develop a strategy for rolling out HBB? Were there any policy changes that were made to facilitate the rollout of HBB? Was HBB included in national policy documents?)

Experts from IAP had several meetings with leaders and officials at the MOHFW, National Neonatology Forum of India (NNF), Federation of Obstetrics and Gynecological Society of India (FOGSI), Indian Society of Perinatology and Reproductive Biology (ISOPARB), Trained Nurses Association of India (TNAI) and Society of Midwives of India (SOMI). The MOHFW also set up a committee of experts to frame an algorithm for neonatal resuscitation. A training manual was developed by consensus and is used both in public and private sector.

- Development of national HBB plan (is there a national plan led by the government? Which were the main development partners to support the development and implementation of the plan? Was there a sequencing of districts over multiple phases – how were they prioritized?)

The MOHFW developed a national plan for rollout of HBB with the aim to train all medical officers, labor room staff, auxiliary nurse midwives and Anganwadi Workers in the 10 states of Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, Orissa, Chhattisgarh, Andhra Pradesh, Assam, Jharkhand and Jammu & Kashmir in about three years covering 326 districts. Since these

states were responsible for > 80% of newborn deaths in India, it was calculated that there would be a decrease of at least 30% in deaths due to asphyxia and neonatal mortality.

- HBB funding, inputs and partnerships (is there a national budget for HBB training and equipment? Is the budget part of the government's health sector budget or is it donor-driven? Who are the key partners who have supported HBB in the country?)

In the public sector, funding for training was ensured by the government and equipment is generally available in public health facilities. In the private sector, IAP arranged for funds from private sources, namely Johnson & Johnson India. Johnson & Johnson India continuously supported the program without any gaps.

The member organizations such as NNF, FOGSI, ISOPARB, TNAI and SOMI have also contributed in all manners to implement the NRP-FGM program.

- Adaptation of HBB for the local context (was the HBB training module adapted for your country? Who adapted it? What were main adaptations (images, language, and technical content).)

A modified NRP curriculum was used for training in Basic NRP based on Lessons 1–3 of the AAP Text Book of Neonatal Resuscitation. The algorithm of neonatal resuscitation was developed by an expert committee set up by the MOHFW. Illustrations were also sourced from the AAP Text Book of Neonatal Resuscitation.

3. Implementation

- **In-service training and pre-service education (whether there is a cascade training approach; which cadres are trained? Is it primarily public sector or NGO and private sector?)**

Under a Memorandum of Understanding dated 12 September 2010, national trainers of IAP created about 1,500 District Instructors in public sector in 40 two-day training sessions over six months. Pre- and post-course evaluation of trainees were conducted during the first year of the program. Skills development of 240 trainers was assessed through pre- and post-course written (83 vs. 89% marks) and performance evaluation test (23 vs. 88% marks). Most of the trainers had very good theoretical knowledge before the training, but there was 65% improvement in skill enhancement.

The target cadres for training in the one-day training program on Basic NRP was Medical Officers, labor room staff, staff nurses, Female Health Workers and auxiliary nurse midwives working in community health centers, first referral units and 24/7 primary health centers.

In the private sector, IAP and NNF along with other health professional associations continue to carry out training for doctors, nurses and midwives to reach the target of training 200,000 birth attendants. To date, IAP has directly or indirectly given its support and conducted NSSK training and successfully trained 97,206 health care personnel (including doctors and nurses/midwives) in the government and private sector. In some states, public-private partnerships carry out the NRP training (see Figure 2 below).

Training in NRP is still not included in pre-service education.



Data as provided by Government till April, 2014 (Fig: 2)

- **Actions to improve quality of implementation and retention of skills (e.g., supervision and monitoring, low-dose high frequency training/practice in monthly meetings, other quality improvement processes)**

In the private sector, a study on quality improvement, low-dose high-frequency training and impact has recently been planned and will be executed in the coming months.

- **HBB equipment and logistics systems (whether procured by govt. or partners and if by partners, who? Whether imported or local; what brand; system for distribution; whether all facilities are equipped with bag and masks and there are sufficient supplies in the program).**

The mannequin kits are being procured from Laerdal Medical India Pvt. Ltd. The model used for the training program is NeoNatalie Basic (Light), model No 104-10002. Once the training kits are procured, they are distributed among the different states to the respective authorized people depending upon the requirement and the training load. The IAP also provided the training kits to the state government as needed.

- **Supervision/monitoring of the provision of HBB services.**

The government has its own mechanism for supervision and monitoring.

- **Referral System (whether babies are referred to high levels)**

In the public sector, there is a referral system to higher facilities. In addition to local arrangements for transport, ambulances are available under the National Rural Health Mission in many facilities.

- **Recording and reporting system (whether service statistics are recorded in the facility register; what indicators are recorded; are these numbers aggregated and reported up? Are these indicators in the national HMIS or is it special project-based?)**

The data related to NRP-FGM training in the private sector are captured and maintained through a sophisticated, web-based management system. The NSSK government has its own reporting and recording system.

- **Implementation status in country (to what extent has it been rolled out nationally – approximate number and percentage of districts and health facilities where HBB is provided; roughly, number and percent of health providers that have been trained in HBB)**

In the private sector, the training program has been successfully implemented in almost all the states of India by covering the majority of districts. Currently the program is running in 27 states.

- **Summary of strengths (success factors), challenges, actions to resolve challenges.**

Strengths and success factors

- 1) IAP currently has strength of more than 23,000 highly dedicated members across India.
- 2) IAP has successive committed leadership at the highest level which helped the project thrive.
- 3) IAP made sure to liaison with and involve all stakeholders.
- 4) The NRP project has received regular support from the grant from Johnson & Johnson, India.
- 5) Smooth functioning web-based management system.
- 6) Dedicated administrative structure.
- 7) Separate NRP-FGM warehouse based at Meerut (Uttar Pradesh) to manage the entire program logistic and supply chain management.
- 8) Trainer of trainer workshop on regular basis with of AAP and LDSC support to create a pool of trainers.
- 9) Dedicated and committed State Academic Coordinators and trainers at all levels.

Challenges

The main challenge is involving the public sector which can be resolved with effective communication backed by evidence. Even getting equipment like good manne-

quins was a challenge which was resolved with effective involvement of the manufacturer (i.e., Laerdal). Sourcing material for the training kit has also been a challenge which could be resolved through innovation and finding local suitable vendors. To keep trainees in the public sector fully involved for the two-day training course is another challenge and can likely be resolved by involving highly committed trainers.

The current NSSK program faces several challenges that need to be addressed:

- 1) The current NSSK model is designed around the assumption that training and certifying health workers will lead to improved performance in the delivery room. However, this current model lacks a mechanism for monitoring patient care delivered at the bedside to assure the effectiveness of the health training and the translation of skills acquired in training courses to patient care delivered at the bedside. Nor is it designed to monitor whether NSSK trained providers are actually present at the bedside during immediate newborn care. A lack of sufficient decline of the birth asphyxia rate despite a large number of trained providers is strong evidence that skills are not applied at the patient bedside as intended. The existing NSSK program is in need of on-going performance monitoring so that synchronized efforts can be taken towards continuously improving newborn care for effective results.
- 2) The current NSSK model lacks a system for maintaining skills of previously trained providers such as a clear roadmap for refresher training and maintenance of certification to enhance once trained professional skills at regular intervals. Mechanisms of mentoring, monitoring and supportive supervision need to be developed uniformly and integrated into the existing mechanism. Increasing the number of collaborative centers at the state level will also be required.
- 3) Current NSSK training is based on traditional learning and teaching styles with frontal, repetition style teaching during which clinical scenarios are explained at length. In addition, practice-based learning is limited due to the high provider-to-mannequin ratio of 8 to 1 which allows limited time to become familiar with equipment, mannequin and manual skills. New advances in adult learning theory have shown that experiential learning, during which a clinical scenario presents itself to the trainee and which requires appropriate recognition and interpretation of clinical data rather than understanding and memorization of the instructors words offers far superior results in case management skills. Experiential learning is the current training standard for all simulation-based, team-oriented, case-management training in leading institutions worldwide. NSSK needs to changes in terms of better including evidence from adult learning theories which

emphasize experiential learning with increased emphasis on hands-on training and acquisition of skills.

- 4) The current NSSK model relies on an individual provider to take comprehensive action in case of newborn emergencies but does not address managerial and structural issues that may be major obstacles in improved performance. The current system of immediate neonatal care requires improvements at levels beyond the health providers through integration of health facility administrators, district health managers and public health officials.

4. Institutionalization

- Integration of HBB (has HBB been integrated and embedded as part of the national health program or is it treated as a special project; is it integrated with essential newborn care and/or emergency obstetric and newborn care? Is it integrated in the national HMIS?)

NSSK is a part of National Health Program and integrates essential newborn care. NSSK is a special project for building capacity of staff involved in newborn delivery and care implemented in most states of India. NSSK is integrated with essential newborn care. Under NSSK, training data is captured by the government's own reporting mechanism.

- **Sustainability of HBB (is the HBB program led and owned by the government or is it primarily driven by donors and development partners? Is the government coordinating and providing guidance to states and districts and development partners to roll out HBB? Is HBB a part of the national health program with a national budget and as part of the national newborn and EmONC program?)**

NSSK in the public sector is a government-owned national health program and is run from internal resources. Over 100,000 health care providers have been trained in the public sector which is indicative of interest in the program. Every state government has a mandate to implement NSSK program as per the state requirement.

5. Key Lessons Learned

- A collaborative model of national and international professional societies with governmental and private support can provide effective training on a huge scale within short periods of time.
- The "hands on" learning approach was associated with a major pre- to post-training improvement in skills acquisition and application in the training setting.
- Highly committed leadership and trainers are very important for successful implementation of the program.

- Places where coordination between IAP and other stakeholders was strongest have benefitted the most.

6. Next steps towards institutionalization and national impact (Plans and recommendations)

The IAP-NRP-FGM team is planning to intensify the NRP-FGM program in 13 districts where the focus will be on following deliverables in 2015.

- 1) Achieve 100% training saturation in the identified 13 districts.
- 2) Conduct training of trainer's workshops and refresher training to create a pool of trainers.
- 3) Implement quality improvement plan for training and facilities.
- 4) Implement low-dose high-frequency training plan at facilities.
- 5) Conduct impact study to evaluate the improvement in reduction of NMR and skilled birth attendance.

References

- 1) State of Indian Newborn report 2014 (SOIN report - 2104).
- 2) Liu et al, 2012, Lancet 2012 statistical report.
- 3) Deorari AK, Paul VK, Singh M, Vidyasagar D. The national movement of neonatal resuscitation in India. *J Trop Pediatr* 2000; 46: 315-317.
- 4) Choudhury P. Neonatal Resuscitation Program: First Golden Minute *Indian Pediatr* 2009; 46: 7-9.



HBB training in India

India Case Study #3: Belgaum, India

Roopa Bellad, (Jawaharlal Nehru Medical College, Belgaum)

Belgaum was one of three Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Global Networks for Women's and Children's Health Research sites of the multi-national study conducted to test the effects of the implementation of HBB training of facility birth attendants on perinatal outcomes. Sponsors included NICHD, the Norwegian Agency for Development Cooperation (NORAD) and the Laerdal Foundation.

HBB training of birth attendants was the major component of the study intervention, which consisted of three major components: selection of the Master Trainers and birth attendants for training; training; and quality improvement (QI) and monitoring activities.

The AAP provided technical assistance to identify HBB training best practices and assisted the HBB central core staff (RTI International and NICHD) in developing two tiers of HBB training workshops: central-level Master Trainer courses and facility-level courses for birth attendants.

The Initial Master Trainer team included three AAP HBB Master Trainers paired with site HBB Master Trainers (physicians), to provide a ratio of six learners to one Master Trainer. The initial Master Trainers course provided intense, hands-on training to provide at least one Master Trainer per facility. The newly trained Master Trainers in turn conducted multiple, facility-level birth attendant team trainings in 33 facilities in three-day, hands-on workshops using the same ratio of six trainees to one new Master Trainer with pre-post assessment. Staff turnover was addressed by providing individual birth attendant HBB training.

This training cascade was designed to preserve the integrity of the intervention and allow rapid startup, minimize training costs, and provide at least one Master Trainer for each facility.

Refresher training: Six months following the completion of initial HBB training, the refresher training courses were conducted for active birth attendants who had received prior HBB training. The refresher training courses included the use of the HBB knowledge and skills videos developed by the AAP and evaluations to examine retention and progress with skills development.

During the initial phase, all the birth attendants from the selected facilities were trained. For the refresher training, only active birth attendants were trained. Birth attendants from all levels of the MOH health system and also the private clinics in the following 33 facilities were trained: 25

public sector facilities (14 primary health centers, three community health centers, two hospitals, seven Taluka Hospitals and one district hospital); and eight private sector facilities (five clinics, two hospitals and one tertiary hospital).

Supervision and monitoring: The QI and monitoring activities were important components of the study intervention. The QI team consisted of the facility coordinators, QI managers, central team members and the site coordinator. The medical officers of the primary health center were identified as the facility coordinators and five Master Trainers from the MOH acted as QI Managers.

QI activities were implemented at all levels. Facility coordinators at the facility monitored daily and reported to the QI manager, who visited the facility both announced and unannounced every month and reported to the central team. QI activities included: direct supervision, team building and accountability measures to maintain standardized delivery room records; daily checks of equipment availability and cleanliness; daily bag and mask ventilation practice; resuscitation debriefings and death audits; observation of deliveries or HBB skills (using a neonatal simulator if no deliveries were available) during regular and unannounced site visits; review of monthly monitoring reports; biweekly data review and discussions between the site HBB coordinator and the central core staff (RTI International and NICHD), followed by discussions with facility Master Trainers and birth attendants; and dissemination and sustainability planning. In addition, the central team members at the facilities conducted monthly meetings.

The most effective and innovative QI activities were: the establishment of HBB corners for daily drills, observations of the deliveries by the facility coordinators and QI managers, and resuscitation debriefings and audits, feedback and recommendations to improve the skills. These activities improved the skills and confidence of the birth attendants.

All 33 facilities were equipped with bags and masks, HBB mannequin (for daily practice) and delivery kits. There were sufficient supplies in the program up to 2014 and these are still in use in the facilities.

All facilities received uniform HBB training materials and equipment (Laerdal NeoNatalie® kits and clean delivery kits).

The referral system was developed on the basic HBB Action Plan Chart by developing a more detailed algorithm for managing birth asphyxia where it is stated that after 10 minutes of bagging if there is a heart rate then the

baby should refer to an advanced care center with the provision of bagging during transportation.

HBB-specific data to evaluate the HBB training, program and QI and monitoring activities in the facilities were used.

HBB was rolled out in all the 33 public and private sectors facilities. A total number of 1,083 birth attendants were trained during the initial course and 308 during the refresher course.

Strengths:

- Focus on skills acquisition during training
- Retention of skills through daily drill and refresher training
- Resuscitation debriefing
- Death audits
- Supportive supervision and mentoring

Challenges:

1. Improving the resuscitation practices especially within the Golden Minute

2. Implementation of QI activities:

- Establishment of HBB corners at appropriate places
- Initiating and continuing daily drill by birth attendants
- Physicians too busy to practice, entered delivery room only for complicated deliveries
- New recruitments and transfers of birth attendants

3. Retention of skills

Actions:

Daily supervision by the facility coordinators and frequent visits and supervision by the QI managers, central team members, as well as strengthening the reporting system and giving feedback to the birth attendant, helped to overcome the challenges.

Institutionalization

Integration of HBB into pre-service and in-service training:

HBB training is included in the undergraduate and post-graduate curriculum of the medical and nursing colleges of the KLE University, Belgaum. Three other nursing institutions that participated in the Global Network research project have also incorporated HBB in the training curriculum.

Lessons

- The HBB approach offers significant improvements in knowledge and skills of the birth attendants in order to perform proper resuscitation of newborns.
- Provision of HBB practice and equipment strengthened the services of birth attendants.
- Cascade training design was successful in training large number of birth attendants.
- Refresher training is essential to improve and retain the skills.
- Supervision, monitoring and mentoring are key factors for successful implementation of HBB program

Kenya Case Study

Stella Abwao (Save the Children); Sherri Bucher (American Academy of Pediatrics and Indiana University); Peter Kaimenyi (MCHIP/Jhpiego); Dr. John Wachira (Kenya Pediatric Association); Professor Fabian Esamai (Moi University); Dr. Annah Wamae (Ministry of Public Health and Sanitation)

1. Country statistics (Kenya DHS 2014[1])

- Neonatal mortality rate: 22/1,000
- Causes of newborn death : Causes of newborn death and proportions, not included in DHS
- Skilled birth attendance: 61%

2. Preparation for scale-up

Newborn resuscitation programs prior to HBB introduction

Through Kenya's medical schools, medical training centers and ongoing Ministry of Health (MOH) in-service training, newborn resuscitation was included in pre-service education. The training primarily targeted health trainers, doctors and other clinicians, responsible for maternal and child health care.

- **2005:** Review conducted of evidence-based case management including newborn resuscitation.
- **2006:** The Kenya Emergency Triage and Treatment Course (ETAT) was developed by the KEMRI/Wellcome Trust Research Programme, in collaboration with the MOH Division of Child Health and the University of Nairobi. This course is mainly for doctors and is administered by the Kenya Paediatric Association (KPA). In January 2009, new ETAT+ instructors took the UK Resuscitation Council's Generic Instructor Course in collaboration with the Aga Khan Hospital, and 700 medical personnel were trained.
- **2007–2009:** National trainings focusing on the World Health Organization's (WHO's) Essential Newborn Care (ENC) recommendations—which includes newborn resuscitation—were held in collaboration with WHO. This training targeted health providers from the MOH's Division of Family Health (DFH) and Division of Child and Adolescent Health (DCAH), Kenyatta National Hospital, provincial general hospitals, district hospitals, medical training colleges, nursing schools, and church /mission Hospitals for all five provinces (Nairobi, Central, Eastern, Rift Valley and Nyanza Provinces).
- **2009–2013:** HBB was field tested in Kenya by the American Academy of Pediatrics (AAP) in collaboration with Moi University School of Medicine (Eldoret) and Indiana University School of Medicine, with USAID support. Skilled birth attendants from various health facilities in Western Kenya were trained in HBB, during HBB pre- and post-implementation trials.
- **2010–2011:** Kenya Basic Pediatric Protocols were updated to adopt evidence-based clinical practice guidelines drawing from WHO's ENC Guidelines and HBB clinical protocol. The KPA, with collaboration from

the Kenya Neonatal Resuscitation Council, partnered with Ministry of Public Health and Sanitation (MOPHS) and other partners and programs (e.g., USAID-supported Maternal and Child Health Integrated Program [MCHIP], Church of Jesus Christ of Latter-day Saints [LDSC] and Rotary International) to conduct training using the updated pediatric protocols and also initiate HBB training.

Policy and strategy development and HBB national plan

- Through USAID/MCHIP support, stakeholder meetings were held with key actors at the MOPHS to discuss HBB newborn resuscitation and explore possibilities of its use or adaptation in Kenya for newborn resuscitation. Since Kenya already had various ongoing resuscitation trainings, several meetings with key stakeholders were necessary to introduce HBB as a worthwhile newborn resuscitation option, for immediate in-service training and service rollout.
- **2012:** A stakeholder meeting supported through MCHIP was held to review and discuss content of ENC training materials that would include HBB newborn resuscitation and other evidence-based newborn health interventions. A proposed draft HBB rollout plan for the existing provinces/districts was also discussed. Since MOPHS budget constraints limited the development of a specific HBB plan, a separate rollout plan was not elaborated. However, the MOPHS was receptive to inclusion of HBB into existing ENC guidelines, training manuals and service protocols. Updated National Guidelines on Essential Newborn Care (2012), were developed with MCHIP and other partner support, accompanied by updated Facilitator and Participant ENC Training Manuals that include HBB images, language and content and other updated newborn health evidence-based components.
- **2012 July:** MCHIP facilitated updates on the new ENC Guidelines for national and provincial Integrated Management of Childhood Illness/newborn focal persons, and with the trained focal persons conducted further skills training on ENC/HBB for midwives and other health providers caring for newborns in the different provinces/regions. In collaboration with MOH-DCAH, MCHIP also trained focal persons as trainers under the APHIA Project.
- **2012 October:** MCHIP conducted skills demonstrations in HBB and active management of the third stage of labor at the National Nurses Association of Kenya (NNAK) Annual Scientific Conference
- **2013 June:** A large stakeholder meeting was held in Nairobi with the following partners/representatives from the global level and locally-based implementing

partners: HBB Global Development Alliance (GDA); MCHIP; AAP; Johnson & Johnson; Laerdal; Kenya US-AID Mission; KPA; Aga Khan University Hospital; Amref; MOH-DCAH; Christian Health Association of Kenya (CHAK); East, Central and Southern African Health Community (ECSA); East, Central and Southern Africa College of Nursing (ECSACON) Kenya; Gertrude's Garden Hospital; Indiana University/Moi University Collaborative; International Confederation of Midwives (ICM); Kenya Medical Training Colleges; Kenya Pediatric Nurses Association; Kenyatta National Hospital; LDSC; Mater Hospital; National Association of Kenya-Midwives Chapter; MOH; Moi University; NNAK; Neonatal Nurses Association of Kenya-Midwives Chapter; National Resuscitation Council of Kenya; Nursing Council of Kenya; Phillips Pharmaceutical; Pumwani Hospital; Pumwani School of Midwifery; Radbone Clark – Kenya; Save the Children; University of Nairobi and University of Witwatersrand-South Africa

3. HBB Implementation

- **Key HBB Partnerships:** HBB GDA partners include: USAID/MCHIP; National Institutes of Health; Save the Children; AAP; Laerdal; Johnson and Johnson; KPA; Government of Kenya (2009–2010 MOH and 2011–2013 MOPHS and Ministry of Medical Services; since 2013, county MOHs exist within a devolved health system); National Resuscitation Council of Kenya; Moi University School of Medicine; Indiana University School of Medicine; University of Nairobi; Amref; 2010–2012 LDSC; and Global Network for Women's and Children's Health Research.
- **Role of National Institute of Child Health and Human Development (NICHD); Moi University School of Medicine, Eldoret; Indiana University School of Medicine, Indianapolis (2009–2013):** Kenya participated in both the initial field testing of HBB, supported by grants from AAP, and in an expanded implementation field test with funding from USAID. Field testing resulted in revision of the HBB package of materials based on feedback from Kenyan participants. A two-year, pre/post-test implementation trial of HBB was conducted at 23 health facilities in rural, Western Kenya. This involved extensive initial training, refresher training, continuous quality improvement processes and a six-month sustainability phase. A total of 344 birth attendants were trained during the project.
- **HBB Implementation (2013–2014):** The rollout of HBB was accomplished through various MOH program partnerships, bilateral programs, and other projects and stakeholders, as mentioned above. These partners contributed to, or directly supported the following: relevant updates to technical content included in national training materials/manuals, procurement of HBB supplies and equipment, in-service training, supervision and mentorship of already trained health providers. National stakeholders opted to maintain

the use of the 500ml Ambu bag for service delivery, although NeoNatalie sets were distributed and used during training and within facilities where these were made available by partners. Information on equipment and supplies procurement processes and quantification were not readily available for this documentation.

- **Referral systems:** In general, newborns are managed at the facility level they present to, unless they have a serious condition that requires higher level or specialist care. For newborn asphyxia, referral is limited due to logistical constraints that do not allow timely dispatch for further care. However, if specialist or higher level of care is available within the same facility then newborns would have access to needed specialist care.
- **NBH data recording and reporting system:** In Kenya, newborn data has traditionally been included within the maternity register, but information focusing on specific newborn indicators has been scanty. In 2013, MCHIP supported the MOH-DFH to develop simple monitoring and evaluation tools for reporting and monitoring newborn health, although it is unclear whether or not these were finalized/used thereafter. Through the Maternal and Child Survival Program, discussions were held in 2014 for potential inclusion of NBH indicators into DHIS2 reporting.



Happy midwife mother and baby

- **In-service training and pre-service education:** A cascade training approach is used for master trainers, facilitators and providers. Although most efforts to date have focused on in-service training, some efforts were made by in-country HBB champions to integrate HBB knowledge and skills training into pre-service educational programs, through the KPA, University of Nairobi, Moi University, and the Presbyterian University of East Africa.
- **Actions to improve quality of implementation and retention of skills:** A quality improvement initiative was undertaken to support the pre/post HBB implementation trial by the Global Network for Women's and Children's Health Research.[2]

4. Institutionalization

- Because HBB is integrated into national ENC Guidelines and training manuals for health trainers and service providers, it is becoming a larger part of newborn health training, practice and service delivery (Figure 1).
- HBB is also integrated into the national guidelines as the "A" and "B" components of neonatal resuscitation for "Basic Paediatric Protocols for ages up to 5 years" in 2010.[3] This integration is a result of the efforts of organizations and individuals who participated in drafting and integrating HBB into the guidelines with the Government of Kenya-MOH. These organizations and individuals include: KPA (Prof. Fred Were), National Resuscitation Council of Kenya (Dr. John Wachira), University of Nairobi (Prof. Were and Dr. Wachira), KEMRI (Dr. Mike English) and Moi/Indiana University Schools of Medicine (Dr. Sherri Bucher).
- From 2013 to date, quality improvement efforts to support HBB sustainability are ongoing at Riley Mother Baby Hospital in Eldoret, Kenya (Janet Rukunga, Nurse; Dr. Sherri Bucher).[4]
- In 2009, Indiana University School of Medicine trained 68 birth attendants in western Kenya (with AAP funding); in 2010, 424 birth attendants were trained in western Kenya (with USAID funding); from 2011 to 2013, this system was part of the NICHD pre/post implementation trial of HBB (NICHD, Government of Norway and Laerdal Foundation for Acute Medicine funding).
- 2011 to date: As one of the AAP Country Mentors for HBB, Dr. Bucher provided technical assistance for a variety of HBB implementation partners in Kenya; In 2012-2013, she developed and conducted proof-of-concept testing for a mobile-phone based data collection system for HBB data (Laerdal Foundation for Acute Medicine funding). [5]
- 2013-present: A mobile-phone based system for HBB data collection (mHBB) was developed by a collaborative team from Indiana University School of Medicine (Dr. Sherri Bucher), IUPUI School of Informatics and Computing (Dr. Matthew Palakal), Moi University School of Medicine (Professor Fabian Esamai and Kevin

Otieno), and Clark University (Md Touhidul Imran Chowdhury). mHBB includes 12 forms: eight related to training and four forms for in-service implementation, including three forms specifically related to quality improvement. A successful proof-of-concept study to assess feasibility and acceptability of mobile phone based HBB data collection was conducted 2013-2014. mHBB was featured as one of the few mHealth tools developed specifically to support neonatal resuscitation implementation in "mHealth and Neonatal Resuscitation: A review of interventions, approaches and applications," (Namita Agravat; December 2013) prepared for the United Nations Commission on Life-saving Commodities Neonatal Resuscitation Technical Reference Team,[5] and in the USAID mHealth Compendium Volume 5, Technologies to support Maternal, Newborn, and Child Health interventions in low and middle-income countries (Rebecca Levine; May, 2015).

- From 2014 to 2015, Amref is conducting ongoing HBB training and implementation in Nairobi County (Drs. Shiphrah Kuria and John Nduba; support from Johnson and Johnson, Save the Children, and technical assistance from AAP—Drs. Susan Niermeyer and Sherri Bucher).
- Various small North American nongovernmental organizations contributed at various times to regional HBB implementation efforts. These include: Uhai for Health (University of Massachusetts, Dr. Pegeen Eslami[6]), Project CURE (Patty Kelly), Project Humanity, and SHARE (Dr. Jeffrey Karasik and Janet Rukunga, Riley Mother Baby Hospital, Eldoret) in conjunction with the MOH.
- Kenya and Tanzania are contributing to a translation of HBB materials into Swahili.

5. Further considerations for sustainability of HBB

- To move towards sustainability and full government ownership and leadership for integrated HBB programming, there is a need for clear articulation and dissemination of national and county HBB newborn health strategic plans and allocation of budgets to support training and service delivery components, including relevant guidance and coordinated support from donors and other development partners.
- HBB/asphyxia-related indicators and other important newborn health indicators are currently not included in the national health management information system (HMIS) and DHIS2 data. Availability of specific service delivery data for newborn health indicators is crucial. Systems and tools to capture such data need to be instituted or improved for county- and national-level consumption.
- There are still significant shortages of newborn resuscitation equipment in Kenya, even in areas where HBB implementation is ongoing. A well-functioning procurement and logistics system and feasible reductions in tariffs and customs duty are needed to facilitate access to newborn health commodities (i.e., newborn resusci-

tation equipment and other newborn health supplies) and also to ensure appropriate standards, specification and quantities are met. These commodities should be made available at every health facility that takes care of mothers and newborns.

- Regarding implementation status of HBB in-country, overall consolidated data is still to be gathered and compiled from the MOH and collaborating partners, including one-off volunteer health providers from outside Kenya who have also conducted training in rural facilities.

6. Strengths, challenges and lessons learned

Strengths

- Under the leadership of USAID/MCHIP in collaboration with GDA partners, MOPHS, Ministry of Medical Services and multiple other international and local partners, HBB was initially tested, well received and subsequently implemented in Kenya.
- A strong HBB research program was completed.
- Local HBB capacity was built through in-service training.
- This initiative strengthened collaboration with MOH and various partners for HBB implementation and support.
- This initiative prompted further exploration into newborn health services and supportive systems, tools, supplies and equipment needed for well-functioning services.

Challenges

- Lack of a budget to support a national HBB plan and rollout, and complicated budgetary implications within current county systems, pose challenges.
- High rates of HBB trained staff turnover at health facilities disrupted maintenance of adequate coverage and quality of HBB services.
- Staff shortages (trainers and mentors) continually pose challenges for ongoing HBB supervision, mentorship and support.
- There has been slow penetration of HBB into pre-service training.
- In-service HBB implementation has been inconsistent due to devolution of the health system and multiple disruptions due to health worker strikes.
- There have been procurement and logistical challenges and high tariffs/duty on imported HBB supplies and equipment.
- HBB is implemented only at facility levels, with no community options for hard-to-reach areas with limited health facilities.

Lessons learned

- Stakeholder meetings and discussions are instrumental to fostering stronger partnerships and gaining national consensus for initiation and expansion of HBB implementation.
- Involving pre-service education institutions in early HBB planning and initiation at country level could influence longer term traction for HBB skills and practice.
- Emphasis on HBB-related newborn data (recording, use and reporting) during HBB training, can contribute to enhanced practical use in HBB implementation during service delivery and potential input to national HMIS/DHIS2, etc.
- To ensure ongoing supervision and mentorship, consistent approaches and creative solutions can be explored to further strengthen HBB implementation within health facilities.

References

1. KNBS, MOH, NACC, KEMRI, NCPD: 2014 Kenya Demographic and Health Survey: Key indicators. In. Nairobi, Kenya; 2015.
2. Bucher S, Bang A, Vernekar S, Patel A, Meleth S, Gisore P, Somannavar MS, Muyodi D, Goco N, Liechty E et al: Implementation of continuous quality improvement processes to support Helping Babies breathe practices in India and Kenya. In. Pediatric Academic Societies conference, Vancouver; 2014.
3. GOK, Health Mo: Basic Paediatric Protocols for ages up to 5 years. In. Edited by Services MoM, November 2013 edn. Nairobi: Government of Kenya; 2013.
4. Rukunga J, Bucher S, Esamai F: Initiation of a Plan-Do-Study-Act quality improvement program supports sustainability of Helping Babies Breathe in Kenya. In. Pediatric Academic Societies, San Diego, CA; 2015.
5. Agravat N: mHealth and Neonatal Resuscitation: A review of interventions, approaches, and applications. In.; 2013.
6. Eslami P, Bucher S, Mungai R: Improper Reprocessing of Neonatal Resuscitation Equipment in rural Kenya compromises function: Recommendations for more effective implementation of Helping Babies Breathe. Resuscitation.

Malawi Case Study

Fannie Kachale, Ministry of Health, Pilirani Msambati, Ministry of Health,
Victoria Shaba, Save the Children, Victoria Lweshwa, Save the Children

1. Country statistics

Malawi is one of the few countries that have achieved Millennium Development Goal 4 of reducing the child mortality rate by two thirds by 2015. Recent estimates from 2011 of under-five, infant, and newborn mortality are 83, 53, and 29 deaths per 1,000 live births respectively. However, neonatal deaths contribute to about 30% of child mortality. The major causes of neonatal deaths in Malawi include intrapartum-related birth asphyxia (28%), severe infection (27%) and complications of preterm birth (27%).

To reduce the high neonatal mortality rate, the government of Malawi has embarked on implementing high-impact interventions such as increasing skilled attendance at birth to 85% (Road Map for accelerating Reduction of Maternal Mortality, Malawi 2012–2016) and strengthening Integrated Management of Childhood Illness and community case management that include care of the newborn, Kangaroo Mother Care and community-based maternal and newborn health (MNH). The HBB initiative was adopted to strengthen management of newborns with asphyxia.

2. Preparation for scale-up

Malawi has scaled up HBB since 2011, following an essential maternal, obstetrical and newborn care assessment that revealed the low-quality of resuscitation for asphyxiated newborns. The HBB approach represented no change but rather an improvement on methods such as use of action plan and emphasis on the “Golden Minute.”

Policy and strategy development

The Ministry of Health's (MoH's) Reproductive Health Directorate (RHD), in collaboration with Malawian stakeholders, held a meeting to introduce HBB. This meeting resulted in a decision to have key Malawian public health leaders participate in the HBB Training of Master Trainers in Addis Ababa in February 2011. The National Master Trainers presented HBB to the Sexual and Reproductive Health Technical Working Group, which approved HBB as a step in management of newborn asphyxia. The MoH subsequently endorsed HBB in March 2011 with a clear consensus on national scale-up.

The MoH has incorporated HBB into policy and strategic documents (i.e., The Reproductive Health Strategy 2011 to 2016, Road Map for Accelerating the Reduction of Maternal and Neonatal morbidity and Rate, Integrated Maternal and Newborn Health training manual and the Obstetric Protocols). Major stakeholders that were

involved include representatives from the government, nongovernmental organizations, regulatory bodies, donor partners and teaching institutions.

HBB national scale-up plan

The HBB national scale-up implementation plan was developed in March 2011 by the RHD and its partners. The scale-up plan consists of background information, the goal and objectives of the initiative, proposed program activities according to each objective and a description of the role of major partners. Among the major roles highlighted in the plan were that the government will procure equipment for implementation while partners were expected to procure equipment for training; supervision and monitoring will be led by government with support from partners. The major partners that supported development of the plan were: the MoH, MCHIP, Save the Children, UNICEF, American Academy of Pediatrics and Jhpiego. The MoH agreed to include HBB in essential newborn care within integrated MNH which receives funding from the government with support from donors.

3. Implementation

Cascade training design

HBB followed a cascade training design to cover both in-service training and pre-service education. In-service training: Malawi trained a minimum of three District Trainers in each of the 28 districts to facilitate district-based training and conduct mentoring activities. However, the number of trainers per district has declined over time in some districts due to transfers. Districts that experienced a high turnover of District Trainers use HBB trainers from neighboring districts. The country initially planned to train 30 providers per district but this was changed to 30 percent of all delivery providers to ensure adequate coverage in large districts; aiming at having at least one trained provider per health facility. The target group to be trained was skilled birth attendants (SBAs), with the main focus being midwives working in the labor wards and trained in basic emergency obstetric and newborn care or integrated maternal and newborn care. During implementation, a majority of SBAs trained were Nurse Midwife Technicians because they are the largest cadre providing maternal and newborn care in Malawi. In addition, Medical Assistants, Anesthetic and General Clinical Officers as well as Registered Nurse Midwives were trained because they conduct deliveries and support management of asphyxiated babies at the advanced level. The majority of providers trained were from public and Christian Health Association of Malawi (CHAM) health facilities as they handle most deliveries

compared to private facilities.

Pre-service education: Two tutors per college were trained to introduce HBB in the colleges and orient fellow tutors. This was done after the Nursing Colleges had already reviewed their curriculum for the Essential Newborn Care course to include HBB methodology as the first step in managing newborns with asphyxia. The Malawi Nurses and Midwives Council provided guidance to the colleges.

The training approach used in pre-service education was slightly different due to the large numbers of students. The tutors did not manage to achieve the required ratio of one facilitator to four or six participants. One tutor instructed 10 or more students using the provided Neo-Natalie simulator placed in the skills labs.

Quality improvement

Malawi followed the already existing supervision structures for MNH to include HBB. The structures are based at district, zonal and national levels with district-level supervision focusing more on skills acquisition and maintenance. The Integrated MNH Supervision Checklist or the supplementary HBB supervisory/mentorship checklists are used during the visits. The district health management team members and the Safe Motherhood Coordinators conduct supervision to health facilities aiming at reaching each facility at least once every quarter. However, this has not been fully achieved in some districts due to funding challenges. The zonal- and national-level supervision focuses on understanding program implementation and retention of skills among providers.

Trained HBB providers are expected to orient those not trained and facilitate periodic practice sessions (low-dose, high-frequency practice) through the Continuous Professional Development program to promote retention of skills with support from district-based trainers and mentors. Some districts have made good progress on this and providers are showing interest in participating in these sessions. However this process requires intensive support and follow-up from the district-based management teams, as well as the zonal and national levels.

Malawi utilizes the Performance and Quality Improvement (PQI) Model which uses a set of standards to assess the quality of reproductive health services. Following the introduction of HBB, the PQI reproductive health standards were revised and included the HBB approach. These standards are used to assess provider skills in HBB on a quarterly basis. The HBB approach was also included on the Obstetric Protocols for Malawi to guide service providers.

HBB equipment and logistics

HBB equipment was distributed based on volume of deliveries in each health facility as follows: two sets of HBB items per health center, five sets per community hospital and 10 sets per district or central hospital. Because the

MoH did not manage to procure the equipment on time as planned, implementing partners made substantial efforts to procure the necessary HBB equipment to support HBB implementation.

To sustain implementation, the HBB equipment that was missing on the Central Medical Stores Trust (CMST) Catalogue was added. The aim was to facilitate procurement by the CMST and ordering by the implementing districts. Currently, a lot of partners (Clinton Health Access Initiative, Save the Children International, SSDI-Services, Church of Latter day Saints Charities and American Academy of Pediatrics through Laerdal, UNICEF) have supported the MoH in procuring HBB equipment and all facilities have sufficient numbers. In the future, districts will be ordering HBB equipment from the CMST. Partners who have supported with procurement work with MoH to develop distribution plans and deliver equipment to the districts.

Referral system

Referral for asphyxiated babies who require advanced care follow Malawi's routine referral system from the health center to the hospital. However, transport challenges affect referral of these babies mainly due to inadequate fleet of ambulances in the districts. The health centers in hard-to-reach catchment areas are the most affected.

Recording and reporting system

Malawi introduced the HBB register to capture data that was not documented in the maternity register. In addition, indicators on management of asphyxiated babies were included in the health information management system, DHIS II. HBB registers have been distributed to all facilities providing labor and delivery services. Service providers record asphyxiated babies in the HBB register and fill the HBB monthly reporting form which is sent to the district for entry into DHIS II every month. This data can be accessed at district, zonal and national levels. However, this is one of the areas that require a lot of strengthening through supervision on filling of the register; timely reporting and use of data to improve quality of care.

Extent of rollout

HBB is being implemented in all districts in Malawi at each facility providing labor and delivery services. A total of 1,763 service providers (60% of skilled birth attendants) have been trained in HBB since the introduction of the program. However, the number of trained providers currently available in some health facilities could be lower due to staff attrition.

The 2013–14 Service Provision Assessment Survey indicates that 88% of facilities are equipped with resuscitation devices and 33% of skilled birth attendants are trained in resuscitation; since institutional delivery is at 75% in Malawi, we estimate that about 25% of newborns have access to newborn resuscitation. But if we use the more recent

program data that 66% of skilled birth attendants were trained, we estimate that access to newborn resuscitation would be about 50%.

Evaluation Results

According to the findings of the process evaluation to assess the quality of care and coverage of the HBB newborn resuscitation intervention at the facility level in Malawi, there was an overall improvement in health worker training, knowledge, equipment availability and management of labor and delivery including newborn care over the two rounds of data collection in Malawi. Districts were grouped into one of three dose groups: high, medium and low dose (nine districts each) based on a score created by combining responses for 16 items related to health provider training, practice, supervision and availability of equipment and supplies for newborn care at facility level. There were generally no significant differences between the high, medium and low dose groups in any of the two rounds or between intervention and control groups. There was no difference in actual performance of managing newborns that did not breathe at birth between rounds of data collection. The findings of no difference between intervention and non-intervention groups and between dose groups are not surprising given the nationwide scope and short duration of exposure that resulted in logistical and managerial challenges to ensure adequate supply of required equipment, guidelines and appropriately trained staff in the facilities.

4. Institutionalization

The MOH leads in planning, implementation, monitoring and evaluation of the HBB initiative. HBB has now been institutionalized with the MoH having a national HBB coordinator and HBB desk officer based at RHD to coordinate implementation of the initiative.

HBB was adopted and incorporated into relevant policy documents such as the Reproductive Health Strategy (2011 to 2016), the Reproductive Health Service Delivery Guidelines, the Roadmap for Accelerating the Reduction of Maternal and Neonatal Mortality in Malawi, the Integrated Maternal and Newborn Health Training Manual as well as the Obstetric Protocols during the usual periodic reviews.

The HBB initiative was integrated into the existing three-week Integrated MNH training package as a module and is reflected in the national budget through MNH program to ensure sustainability.

The MoH ensures coordination among implementing partners through RHD, zonal and district health offices. A multidisciplinary stakeholders meeting is held on quarterly basis to discuss implementation and progress of the initiative.

At each district health office, a focal person is assigned to oversee the progress of HBB service provision in the entire district in collaboration with the Safe Motherhood Coordinator. To date, HBB has been included in District

Implementation Plans and the pre-service educational curriculum.

5. Success factors, lessons learned and challenges

Success Factors

Strong leadership by RHD and MoH: The government led the process, spearheaded by local champions who worked hand in hand with key partners to achieve local consensus. External partners played a role in catalyzing and supporting the process.

Engaging local implementers and other stakeholders: RHD engaged all relevant local stakeholder groups and encouraged stakeholder input to the development of the scale-up plan and implementation process. High-profile events created awareness regarding the need for HBB and commitment among stakeholders.

Country ownership and MoH donor relationship: Country ownership fostered control of the implementation plan and programming agenda for HBB. HBB implementation was not dictated by partners.

Lessons Learned

It is important to clearly stipulate provider follow-up plans following training. The scale-up plan was not clear on the process to be followed for providers to practice HBB and report on sessions done after going through training. All components to do with supervision, mentoring and monitoring were not clear in the plan. This affected implementation.

An inclusive approach to forming partnerships is a critical step in laying the foundation for a smooth rollout of HBB and is key to securing support and avoiding opposition to the interventions at a later date. Malawi focused on forming partnerships from the beginning of the implementation.

Challenges

A phased approach to implementation was not done. This affected quality since districts were implementing with limited resources.

Training in HBB was conducted before procurement of equipment for implementation.

There were no documentation and reporting tools during initial implementation (HBB registers, HBB reporting forms, list of indicators). These were developed after the initiative was already rolled out.

6. References

- Multiple Indicator Cluster Survey 2014. MDG Endline Survey: Preliminary Results, Lilongwe, Malawi.
- Shivam Gupta. Evaluation of the Helping Babies Breathe (HBB) Initiative in Malawi: Results from the Dose Response Analysis, June 2014.
- Spandley J. Integrating Helping Babies Breathe into Pre-service Midwifery Programs in Malawi: A Program Review, March 2013.
- The Road Map for Accelerating the Reduction of Maternal and Neonatal Morbidity and Mortality in Malawi: October 2012.

¹ Shivam Gupta. *Evaluation of the Helping Babies Breathe (HBB) Initiative in Malawi: Results from the Dose Response Analysis, June 2014.*

Tanzania Case Study

Dr. Georgina Msemo Acting Assistant Director Reproductive & Child Health Section, MOHSW, **Dr Donan W. Mmbando**, Permanent Secretary, MOHSW, **Dr Neema Rusibamayila**, Director Preventive Services, MOHSW **Dr Mary Azayo**, Newborn and Child Health Program Manager, MOHSW, **Dr. Erica Thomas (Jhpiego)**

1. Country statistics

The Tanzania neonatal mortality rate (NMR) stands at 21 per 1,000 live births (2013) with a Millennium Development Goal 4 target of 19 per 1,000 live births. Skilled birth attendance is at 51%. The three major causes of newborn deaths are: complications during delivery/intra-partum asphyxia (31%), preterm complications (24%) and infections (20%).

2. Preparation for scale-up

Tanzania did not have a newborn resuscitation program prior to introduction of HBB. Implementation of HBB was preceded by consensus meetings chaired among stakeholders, partners and experts including UN agencies. A demonstration and orientation on HBB was done and training plan developed. Implementation of HBB has a high level of government ownership, with the President determined to see the program implemented in the country after meeting the American Academy of Pediatrics (AAP). The Ministry of Health and Social Welfare (MOHSW) policy was to implement and not to pilot HBB, hence with AAP emphasis on operational research the HBB initial implementation (prior the country-wide rollout) had an implementation and a research arm.

Requirement for policy changes to facilitate HBB rollout: HBB rollout in Tanzania did not require any policy changes, it has a high level commitment and ownership, and newborn resuscitation was among priority interventions. HBB was supposed to be implemented within emergency obstetric and newborn care (EmONC); however, to facilitate quick rollout, HBB was rolled out separately. Newborn resuscitation is included in a national reproductive, maternal and child health (RMNCH) strategy to accelerate reduction of maternal newborn and child deaths.

The government-led HBB national plan: The national HBB rollout plan was developed by the MOHSW in 2009 but had no funding. After impact was demonstrated through the pilot study and implementation at eight research sites, the Children Investment Fund Foundation (CIFF) supported HBB rollout led by the MOHSW. During the rollout, the MOHSW worked with Jhpiego to modify and update the originally written Request for Application by ministerial officials. The HBB steering committee, initially chaired by the Chief Medical Officer then by the Newborn and Child Health National coordinator; has clear terms of reference and provides program technical guidance.

Development partners who supported the development and implementation of the HBB plan: UNICEF supported district training of trainers (TOT) as a preparation for country-wide rollout. WHO supported the national and zonal TOT. The Laerdal Foundation supported training of district trainers and health care providers and supervision. The Church of Jesus Christ Latter-day Saints supported pre-service education as well as training at private health facilities. AAP funded the pilot study at eight research sites.

Support to country-wide rollout: With funding from CIFF, Jhpiego supported: refresher training for national and district trainers; provider training in all 108 districts of the 16 regions in Tanzania's mainland; post-training follow-up; and procurement and distribution of Ambu bags, masks, penguin suction devices and educational materials. USAID's support was through basic emergency obstetric and newborn care, or BeMONC (which has a HBB component).

The rollout plan prioritization: The rollout plan is region by region and their districts. The initial regions where rollout started had the District Health Information System, DHIS 2, in place. Equipment distribution to district level was zonal and training was to go hand in hand with equipment distribution for the CIFF-funded regions. All providers from labor and delivery rooms, including obstetric theaters of public and faith-based facilities were targeted and trained.

HBB funding, inputs and partnerships: availability of a national budget for HBB training and equipment: There is no national budget; rather, due to decentralization, all funding is in the councils where newborn health is a priority. Councils are expected to budget for newborn health interventions including HBB. During initial implementation, councils included HBB training courses in their plan and a few conducted this training (Tabora and Mbeya). The country-wide rollout is donor-driven but government-led. Partners who have supported HBB in the country include the United Nations Children's Fund (UNICEF), World Health Organization (WHO), Laerdal Foundation, Church of Jesus Christ Latter-day Saints, AAP, UN lifesaving commodities, CIFF and Jhpiego.

Adaptation of HBB for the local context: The HBB training modules have been adapted in Tanzania through: translation to a local language (Swahili), adaptation of pictorial images to resemble Africans and the addition of eye prophylaxis in routine care as in essential newborn care training materials. The MOHSW adapted the training materials by combining Objective Structured Clinical

Examinations (OSCE) A and B, and edited/improved the trainer instructions in administering the OSCE.

3. Implementation

In-service training and pre-service education: For in-service training, a cascade training approach has been used and all cadres working in the labor rooms and obstetric theaters have been trained (nurses, midwives, clinicians and medical attendants) from public hospitals, faith-based hospitals, health centers and dispensaries that conduct deliveries, together with midwives working in private health facilities. For pre-service education, nurse tutors from private and public institutions are trained by the Church of Latter-day Saints.

Actions to improve the quality of implementation and retention of skills: High-dose, high-frequency training and practice were implemented through on-the-job training and supportive supervision (for to six weeks post-training) with coaching, as well as use of simulators provided for each health facility with trained providers for on-the-job practicing before each shift. Other quality improvement processes that were used include on-site coaching visits, on-the-job training and practice guide.

HBB equipment and logistics systems: All equipment is procured by either the Government of Tanzania (through Medical Stores Department [MSD]) or UN agencies (through UNICEF and WHO). Partners include ClIFF, the Clinton Health Access Initiative and USAID through JSI. The devices are imported: the brand is silicon reusable. The two following modalities have been used for distribution: 1) MSD (national system), and 2) private companies to fast track training rollout.

Equipping facilities with Ambu bags and masks: All ClIFF-supported/trained health facilities are equipped with Ambu bags and masks based on the minimum standard of quantification done by the MOHSW. The reorder level is to be determined based on the lifetime of the devices' brand. Under ClIFF support to the Government of Tanzania, Jhpiego procured HBB commodities and distributed them to all districts and health facilities conducting deliveries (more than 3,300 public and faith-based health facilities covered to date).

Supervision/monitoring of the provision of HBB services: Supervision/monitoring has been limited to partner visits at follow-up and District Reproductive and Child Health Coordinator initiatives (the current district supervision tool does not capture HBB).

Referral System (whether babies are referred to high levels): All babies requiring advanced care are referred to the next level of referral.

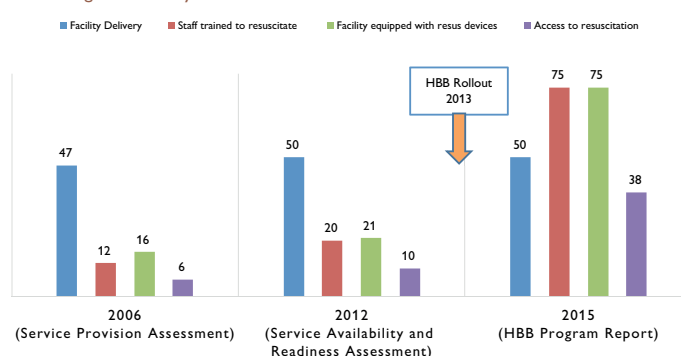
Recording and reporting system: The country has daily registers, tally sheets and monthly summaries at the health facility level as part of tools used for recording

and reporting. Aggregate data is sent to the district level where there is DHIS 2.

Implementation status in country: Implementation status is as follows:

- Under support from Laerdal, the Church of Latter-day Saints, WHO and UNICEF: all Mwanza districts and Dodoma covered.
- UN joint Program 2: Capital City region districts (Dodoma)
- Under ClIFF support to the Government of Tanzania through Jhpiego: Coverage to date is 108 districts in 16 regions. Health facilities coverage is more than 3,300 supported with newborn sized bags and masks, penguin suction devices and educational materials.
- USAID support through Jhpiego: MAISHA covered 251 facilities in the Tanzania mainland (230 districts and 25 regions) and Zanzibar (seven districts and five regions) sites where HBB is implemented within BEmONC. A total of 921 providers from these facilities were trained in BEmONC, which encompassed HBB skills. There has been a dramatic increase in facility readiness; 75 percent of health facilities that conduct deliveries are equipped with resuscitation equipment and staffed with health providers trained to resuscitate newborns. Since coverage of facility-births is 50 percent, we estimate that about 38 percent of newborns have access to resuscitation in Tanzania. This is a significant increase compared to the findings of the Service Availability and Readiness Assessment of 2012 and the Service Provision Assessment of 2006 which had found very low facility readiness and access to resuscitation. Even though coverage of facility-delivery hovered at 50 percent since 2006, access to resuscitation increased significantly after 2013 when HBB was introduced in the country (Figure 4)^{1,2}

Figure 4. Facility Readiness and Access to Newborn Resuscitation in Tanzania



Sources:
Tanzania Service Provision Assessments, 2006. National Bureau of Statistics, Ministry of Health and Social Welfare, & Macro International Tanzania Service Availability and Service Assessment, 2012. Ministry of Health and Social Welfare.
Program Data compiled by Jhpiego for the Ministry of Health and Social Welfare, Tanzania, 2015

Summary of strengths (success factors), challenges and actions to resolve challenges:

MOHSW commitment

- The President's support to ensure the program runs at scale
- Acceptance of the HBB program as the methodology for teaching newborn resuscitation
- MOHSW commitment and regions and districts commitment at orientation
- Declaration of birth asphyxia as a priority area for reducing neonatal mortality
- Committed National Newborn Focal Person at the MOHSW supported by Assistant Director of Reproductive and Child Health Services (RCHS), Director Preventive Services and Chief Medical Officer
- Committed facilitators to train all birth attendants in the current health workforce
- Integration of HBB with relevant other national programs (e.g., essential newborn care, EmONC)
- The commitment to provide health care providers at all levels with the required resuscitation equipment (resuscitator; suctioning equipment)
- Reduction of newborn deaths by 47% in the research sites made providers believe in the program and continue to sustain the interventions; they could be heard saying "No fresh stillbirth is allowed in the labor ward"

Training quality and plan

- A pool of strong committed HBB master/national trainers
- Cascade rollout with each region having HBB district trainers
- Refresher training to increase the skills of the district trainers
- Careful selection of trainers based on skills and OSCEs
- HBB materials translated to local language
- Maintaining trainer-to-trainee ratio and manikin-to-trainee ratio
- HBB equipment distribution prior to all training has been a critical component in the HBB country-wide scale-up; more than 6,000 ambu bags and over 8,000 suction devices distributed to 16 regions (two regions have just been completed in February, accurate numbers of ambu bags and masks will be provided)

Sustainability arrangements

- On-the-job training and practice through continuous professional development; the MOHSW is working on this policy change
- Inclusion of HBB in the national HMIS and in national strategic document
- Ownership of the program by the regions and councils due to systematic country-wide implementation by the national level conducting advocacy to the respective levels before implementation
- Sensitization of MSD to procure and distribute newborn resuscitation equipment and inclusion of new-

born-sized Ambu bags per specification in the national MSD price list catalogue

- Inclusion of newborn interventions (capacity building and procurement of equipment) in council health budgets

Challenges and actions to resolve

- Staff rotation policy does not encourage skills retention at the point of care in absence of on-the-job, continuing training and practice. On-the-job training tools and educational mannequins are expected to be used to support ongoing practice. A policy guideline is under development to support continuous professional education. In addition, a national clinical mentoring system is being developed as a quality improvement approach to build and maintain skills competency of health care providers, including HBB trainees.
- Some health facilities are geographically challenging health and as a result were not reached at post-training follow-up. Councils have a plan on how to reach these geographically challenging facilities in their supportive supervision matrix.
- Because HBB training and follow-up are resource intensive, advocacy has been conducted to incorporate these into council health plans.

4. Institutionalization

Integration of HBB: Newborn resuscitation is not a special project; rather, after country rollout it will be integrated into Essential Newborn Care and EmONC. Currently, essential newborn care and EmONC guidelines have incorporated HBB. In addition, HBB indicators are included in the HMIS.

Sustainability of HBB: HBB is a national program; Jhpiego houses a team of staff supporting the MOHSW to coordinate training and rollout HBB country-wide. The government provides guidance to councils and development partners to roll out HBB. Newborn and child health implementing partners have a meeting forum to discuss the progress. The forum is chaired by the National Newborn and Child Health Coordinator in the MOHSW. An HBB steering committee with specific terms of reference provides technical guidance to HBB program rollout. It is chaired by the Director of Preventive Services.

Summary of strengths (success factors), challenges and actions to resolve challenges for institutionalization:

Strengths:

- MSD has included Ambu bag specifications in its price catalogue
- National clinical mentoring as a quality improvement approach is a priority for the RCHS/MOHSW
- Clinical mentoring and HBB as part of interventions are among prioritized intervention in RMNCH Strategic Plan

¹ Tanzania Service Provision Assessment, 2006. National Bureau of Statistics, Ministry of Health and Social Welfare, and Macro International Inc.

² Tanzania Service Availability and Service Assessment, 2012. Ministry of Health and Social Welfare.



HBB training at Haydom rural hospital.

- Training of pre-service nurse tutors
- The Pediatric Association of Tanzania is among the key newborn stakeholders updating the national pediatric treatment guidelines, which include newborn resuscitation

Challenges:

- HBB Equipment: Penguin suction device requests and reporting (ordering) is still minimal at facility level, not available in-country; the MOHSW and partners are leading quantification exercise, and the MOHSW is working to ensure in-country availability of these easy-to-use devices
- Curriculum changes require time and resources
- HMIS-related challenges include issues with data quality accuracy and completeness

5. Key Lessons Learned

- High-level officials in the MOHSW at national, regional and district level need to buy into the program for it to be scaled-up
- Coaching and mentoring is needed for skill retention, as are champions at the point of care to motivate other staff
- The HBB course is a short training that is easily called up and accepted by providers

- If done effectively and at scale, the HBB program lowers newborn deaths dramatically
- Training rollout and health system strengthening should go hand in hand

6. Next steps towards institutionalization and national impact

- Put in place supportive, national-level policies for continuous professional development to retain and update clinical skills
- Develop and institutionalize a national-wide clinical mentoring system
- Develop facilitator's guide to harmonize facilitation messages
- Support referral centers with advanced care training to support resuscitated babies (HBB training lacks a link for hospitals and health centers)

Uganda Case Study

Jesca Nsungwa Sabiiti and Gelasius Mukasa (Ministry of Health), Annie Clark (URC)

1. Country statistics

Newborn deaths in Uganda now account for 50% of infant deaths and 30% of deaths among children aged under five years. According to 2011 Uganda Demographic and Health Survey, the newborn mortality rate is 27 deaths per 1,000 live births, infant mortality rate at 54 deaths per 1,000 live births and under-five mortality rate at 90 deaths per 1,000 live births. Over half of total newborn deaths occur during the first week of life, mainly in the first 24 hours of life. The common causes of neonatal deaths in Uganda include birth asphyxia, infections and complications of preterm birth; these three causes account for 90% of all newborn deaths. Up to two-thirds of these deaths could be prevented if health services were improved to reach women and newborns with high coverage of evidence-based essential interventions.

2. Preparation for scale-up

HBB was first introduced by the Ministry of Health (MoH) with the support of the American Academy of Pediatrics (AAP). From the very beginning, the MoH was clear that HBB needed to be integrated with essential newborn care (ENC) and this integrated package was called HBB-plus. In August 2010, the USAID Health Care Improvement Project began to support the MoH on a Demonstration Improvement Collaborative in maternal newborn health (MNH) within 34 health facilities and 24 villages in two districts (Masaka and Luwero) in Central Uganda. Prior to the introduction of HBB, there was no national newborn resuscitation program in the country.

A Newborn Stakeholders Meeting lead by the MoH was held on 29 June 2012. Stakeholders met to agree on the main content of training and plan for a training cascade including targets for training and partnerships. Participants included representatives of the MoH, National Newborn Steering Committee, professional associations, donors such as the United Nations Children's Fund (UNICEF) and World Health Organization (WHO), development/implementing partners, civil society, training institutions, MNH care providers and the media. The first session of the meeting was chaired by Dr. Mukasa Gelasius, Chairperson of the National Newborn Steering Committee. Dr. Mukasa recognized the USAID-funded Health Care Improvement Project (HCI) as a partner to move the newborn agenda forward in Uganda; he informed the participants that the aim of the meeting was to share the experience of HCI implementation of improvement in MNH in the districts of Masaka and Luwero, selected by the MoH for strengthening of MNH care. At the

health facility level, there was provision of equipment, protocols, guidelines, training materials and locally made resuscitation tables, as well as training of trainers (TOT) in ENC/HBB/active management of the third stage of labor (AMTSL) and quality improvement. Quality improvement team meetings at the facilities were held monthly with support from project staff and district health office staff. At the community level, HCI utilized the MoH Village Health Team (VHT) structures and trained the VHTs on basics of ENC including drying and stimulating the baby, counselling on danger signs, data collection on pregnancies, deliveries and births in the community. Job aids to improve identification of danger signs in mothers and babies, referral notes, identifying T-shirts, carry bags and bicycles for transportation were provided to all VHTs. MNH staff traveled from the nearest referral facility to conduct monthly quality improvement meetings with the VHTs at village level.

Defining the Technical Content and Package of Basic Evidence-Based Newborn Health Interventions

The National Newborn Steering Committee worked closely with implementing partners to define and adapt a package of cost-effective, high-impact, evidence-based interventions aimed at improving newborn health and reducing neonatal mortality called "Helping Babies Breathe-Plus/Uganda" which includes: HBB within the first one minute at birth (the "Golden Minute"), ENC, extra care for low birth weight/preterm babies and management of newborn infections. This package of interventions is to be implemented in all health facilities in the country.

Guidelines and Materials Development

Helping Babies Breathe-Plus training and mentoring materials were developed pretested and finalized. These included: HBB-plus Facilitator's Flipchart and HBB-plus Learner Workbook (job aid), HBB-plus Mentoring Guide and Report Format. A national-level reproductive, maternal, newborn and child health (RMNCH) stakeholders meeting was organized during which the developed materials were disseminated, targeting representatives of the following institutions: national and regional referral hospitals, medical and nursing training schools, professional bodies, development partners/nongovernmental organizations (NGOs)/civil society organizations, and the Uganda National Health Consumers Association. All of these key stakeholders will be charged with the responsibility of further disseminating the guidelines and building capacity of health workers at the lower levels of service delivery structures.

Policy Changes

- The National Newborn Steering Committee decided to add a Part B on ENC so that HBB is not a “stand alone” program, hence the name HBB-plus for the Ugandan program.
- It was decided to change from workshop-based training to a mentoring approach for training of providers.
- HBB-plus commodities (e.g. antenatal corticosteroids), were included on the Essential Medicines List.
- Specifications were revised for the Essential Equipment List.
- HBB equipment was transferred to National Medical Stores to be supplied along with medicines.
- The national plan for HBB-plus is within the RMNCH plan but the National Newborn Steering Committee under the leadership and guidance of the MOH draws annual work plans for HBB-plus. The key development partners who have supported the development and implementation of the national plan are” the MoH, National Newborn Steering Committee, World Bank, UNICEF, WHO, AAP, Save the Children Fund, Management Sciences for Health (MSH)-Strides for Family Health/USAID, University Research Company (URC), Saving Mothers Giving Life.

National Policy Documents

HBB-plus was included in:

- Planning policy documents: Health Sector Strategic Plan, Child Survival Strategy, RMNCH sharped plan – A promise renewed
- Quality improvement guidelines: Newborn service standards (as part of the “yellow start” program), IMNCI supervision guidelines, health facility assessment tools
- Community Health Worker Guidelines: Integrated Community Case Management
- Monitoring and evaluation (M&E) tools: Health Information Management System and the Indicator Manual for Newborn Quality of care and mother child health passport
- Commodity quantification guidelines based on a tool developed with PATH/UN Commission for Life Saving Commodities technical reference team in Uganda for HBB equipment

Capacity Building

The key partners who have supported HBB in the country are the MoH/World Bank, UNICEF, Save the Children, MSH-Strides/USAID, URC and the Latter Day Saints (LDS). MOH partner capacity was built by providing the partners with the developed guidelines and allocating experienced national HBB-plus mentors to work together with them to conduct TOTs and to further facilitate and cascade the capacity building process in the districts being supported by the partners. The following MOH partners were specifically supported to train the following number of health service providers: Save the Children

(114), World Vision (31) and Healthy Child Uganda (92). Additional training in quality improvement for national and regional HBB-plus mentors and selected members of professional bodies and partners has been planned and is scheduled to take place in due course.

Setting Up Functional Newborn Health Data Systems

USAID’s ASSIST project provided technical assistance to the National Newborn Steering Committee to define a common set of quality improvement objectives and indicators that will be used to measure and monitor the quality of newborn care in all health facilities. This led to a subsequent review of the HMIS registers and forms in consultation with the MOH’s Planning Department/ Resource Center to incorporate the recommended data entry points to enable the capture of key quality newborn health indicators into the national routine monitoring and reporting system. Statistics are recorded in the HMIS, facility register and mother’s passport. The process is still on-going and further support will be required to improve data quality and reporting at health facility level.

Development of Indicator

Definition Manual for Newborn Health Program

A detailed manual of newborn health M&E indicators and QI indicators was started to be developed to ensure uniformity of the definition of indicators, sources of data, analysis, timeliness and frequency of reporting. The manual will be used at all levels of the health system including development partners and agencies involved in M&E of health sector performance.

National Quantification

of HBB Resuscitation Equipment

A stakeholder consultative meeting was held to review and pre-test a quantification tool with support from PATH international. The tool was pre-tested in three hospitals and finalized. A national quantification of resuscitation equipment needed in all facilities with maternity/delivery services was conducted and information was forwarded by the MoH to the World Bank Health Systems Project that is currently funding the MoH to improve procurement for RMNCH services.

Figure 1
SUMMARY: Quantification For Newborn Resuscitation Devices – Helping Babies Breathe (Uganda)

	Resuscitation Bag (Newborn 220–400mls)	Mask Size 0 (Preterm baby)	Mask Size 1 (Term baby)	Suction Device (Penguin) (Multi-use)	Training Mannequin (In-Service)	Training Mannequin (Pre-Service)	Total Cost of Items
National Referral Hospital (1)	30	30	30	30	5		
Regional Referral Hospitals (13)	312	312	312	312	39		
District Hospitals (50)	400	400	400	400	100		
Health Center IVs (170)	1360	1360	1360	1360	170		
Health Center IIIs (937)	1874	1874	1874	1874	937		
1/4 of Health Center IIs (1696)	3392	3392	3392	3392	1696		
Total Number of Items	7368	7368	7368	7368	2947	400	
Unit Cost Per Item (US Dollars \$)	15	0	0	3	70	70	
Cost of Items (US Dollars \$)	110520	0	0	22104	206290	28000	366914
Shipping, Handling and Demurrage Costs (appr. 27% Cost of Items)							99067
Contingency							34019
Grand Total Cost (US Dollars \$)							500,000

HBB Equipment and logistics systems

HBB equipment has mostly been donated, but the MoH/World Bank project procured some equipment. The equipment from the MoH/World Bank was supplied by the national medical stores to targeted facilities. The Laerdal brand has mostly been supplied directly by donors. Not all facilities are equipped, and there is not adequate equipment to cover all health facilities. More equipment is needed.

Concept and Plan to Strengthen Integration of Quality Improvement in Newborn Health Programming
A draft concept and initial one-year plan was developed to strengthen integration of quality improvement in newborn health that will further be sharpened by the Newborn Steering Committee into a National Quality Improvement Implementation Plan that will be aligned to the National Newborn Health Implementation Framework.

Funding

The HBB-plus budget is included in the MoH's costed output budgeting tool and plans, but the biggest funding is from partners.

In-service training and pre-service education

The initial focus has been mainly on in-service training, spearheaded by professionals trained in HBB-plus. The

first steps taken to institutionalize HBB-plus into the pre-service training institutions are the review of the pre-service midwifery curriculum for gaps in relation to HBB-plus and the training of tutors at health training institutions who are being urged to incorporate HBB-plus training into their agendas. Public and private institutions and NGOs have all been embraced by the program. Actions to Improve Quality of Implementation and Retention of Skills

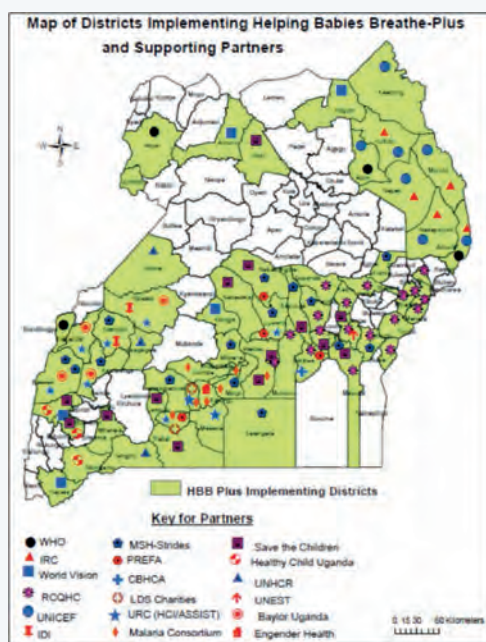
There is frequent supportive supervision of the health workers trained in HBB-plus, and follow-up two weeks after training is part of HBB-plus training. A supervision and health facility assessment tool and an indicator manual for newborn quality of care were developed. Newborn service standards were developed and included in the quality improvement collaborative activities. A mentoring process, which employs quality improvement techniques, has been recommended by the national authorities to maintain and improve skills for newborn care.

Results

A detailed mapping of MoH partners supporting newborn health was conducted with the aim of enhancing coordination of partners and tracking the progress of rolling out HBB-plus in terms of geographic coverage and achievements of partners. Findings from the mapping exercise indicated that 18 MOH partners were support-

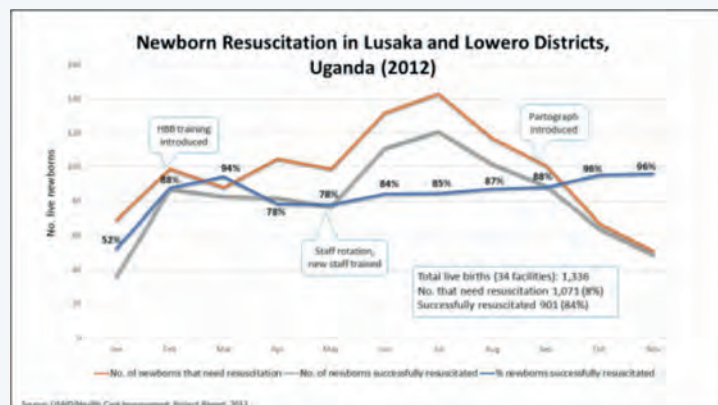
ing implementation of HBB-plus interventions in 62 out of 112 districts in the country (55% district coverage, although the MoH records indicate 39% coverage), and specifically 350 out of the total 2,671 health facilities located in 62 districts being supported (35% health facility coverage). A total of 27% of these health facilities had organized functional resuscitation areas, while 17% of the facilities were practicing Kangaroo Mother Care. As a result of the information generated from the mapping, action was initiated by the MoH to plan to conduct more in-depth health facility assessments to identify the specific quality gaps and guide detailed implementation. The MoH will also use the mapping information to plan, coordinate and build the capacity of partners to scale up HBB-plus. Health worker coverage is 47% of providers who deliver mothers where training has occurred. The Service Availability and Readiness Assessment for Uganda (2013) indicates that 44% of health providers are trained in resuscitation and 53% of facilities are equipped with newborn resuscitation equipment.

Figure 2



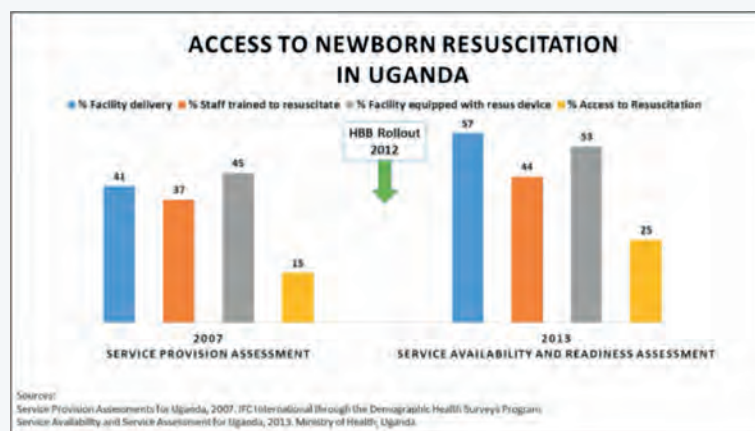
In the two districts of Lowero and Lusaka in Uganda, 34 health facilities implemented the quality improvement approach of team-based collaborative learning. Supported by the USAID/Health Care Improvement project, this approach integrated the routine recording, analysis, reporting and use of service statistics to track the quality of services. As shown in the chart below, health providers of 34 health facilities in two districts of Uganda attended more than 1,000 births, of which 8% did not breathe at birth and needed resuscitation. Of these babies, 84% were successfully resuscitated.

Figure 3



The 2013 Service Availability and Readiness Assessment survey indicates that 44 percent of the health providers are trained in resuscitation and 53 percent of facilities are equipped with appropriate devices, providing access to resuscitation to an estimated 25 percent of newborns. This indicates a small increase in facility readiness and access compared to the findings of the 2007 Service Provision Assessment (37% staff trained, 45% facilities equipped, and 15% access to resuscitation) as shown in the Figure below.

Figure 4



Challenges

While tremendous strides have been made towards institutionalization of HBB-plus in Uganda, many challenges remain to achieve the objective of quality implementation in every facility in every district. Although led by the MoH, the HBB-plus initiative has been primarily donor driven and supported, and there has been a piecemeal approach to implementation. Critically important data needed to measure the impact of the HBB-plus intervention is not being captured in current national MNH registers. Newborn resuscitation equipment will be needed for expansion of HBB-plus into districts that have not yet been reached, as well as replacement of newborn resuscitation equipment in facilities already equipped. Newly trained providers are certified, but a system of recertification is

¹ Service Provision Assessment for Uganda, 2007. Ministry of Health, Uganda, and Macro International Inc., Maryland, USA

² Service Availability and Service Assessment for Uganda, 2013. Ministry of Health, Uganda

needed as well. All birth attendants need to be involved in regular debriefing of every newborn resuscitation incident and in audits of every infant death. Ongoing mentoring is essential for the maintenance of newborn resuscitation skills.

Summary of strengths (success factors and major strengths)

- Leadership by the MoH
- Tailoring of HBB to local needs and a favorable policy environment
- A strong, committed National Newborn Steering Committee
- Support by interested partners

4. Key Lessons Learned

- 1) Public and professional awareness of newborn health issues, plus government commitment to improve the situation, are very important.
- 2) The National Newborn Steering Committee has done a lot to stimulate and catalyze action for newborn survival.
- 3) It is feasible to do mentoring/coaching, but it requires committed trainers, flexibility and follow-up tools for performance measurement.
- 4) Health facility/collaborative meetings increase performance and ownership of HBB-plus.
- 5) District assessment of newborn service standards and response facilitates district uptake and support for HBB-plus.
- 6) Having a national-level Newborn Health Coordinator sitting in the MoH focusing on HBB-plus was useful during the inception phase.
- 7) Procurement of equipment should be done before or soon after training rollout starts; it is critical for providers to have access to newborn resuscitation equipment at their workplaces to immediately apply what they have learned.
- 8) Change in providing high-quality newborn care, including newborn resuscitation, is effected by focusing on quality improvement principles (teamwork, focus on systems and processes, focus on client needs and data use for improvement) and regular interaction with teams to improve work.
- 9) Conflicting schedules of the district coaches can be addressed by assigning facilities and regularizing the supportive coach sessions by including them in the coaches' duty schedules. Since coaching has been regularized on a monthly basis, coaches are able to plan and spare time to do quality improvement activities.
- 10) Sharing information with health facility staff during monthly coaching/mentoring sessions and reference to national policies/guidelines is essential.

5. Next steps towards institutionalization and national impact

- Print copies of the revised HBB-plus materials
- Scale up HBB-plus to other districts, especially in Northern Uganda, Karamoja Region and Kasese Region
- Map out implementers and coverage of HBB-plus; develop a scale-up plan and work out the funding gap to leverage resources
- Plan an early implementation review of HBB-plus implementation in Uganda
- Strengthen the link between HBB-plus implementation at the health facility and VHT work in the community (e.g., postnatal home visitation)
- Expand the pool of national trainers and supervisors for HBB-plus
- Integrate HBB-plus in medical and paramedical curricula for pre-service education and continuous professional development
- Revise national MNH registers to capture data needed to monitor impact of HBB-plus implementation.
- Document all improvement work measuring changes for improvement, team work and communication.
- Sustain outcomes by fostering interaction of systems involving all levels from household to national level.
- Spread HBB-plus to districts where it has not yet been implemented.
- Develop a system of ongoing mentoring for providers in all districts where HBB-plus is implemented, utilizing the trained pool of national and regional mentors to build capacity at district and health facility levels in HBB-plus and quality improvement.
- Develop an HBB-plus national certification and re-certification system.
- Develop/utilize inter-departmental consultative processes involving MNCH technical programs, Quality Assurance Department and Resource Center to attain the end result of revised and finalized HMIS tools.
- Provide support to improve data quality and reporting at the health facility level.



On site refresher training of HBB in Jinja hospital, Uganda

Founding Partners, Helping Babies Breathe Global Development Alliance



USAID Implementing Project Partners



Additional Partners in the Growing Survive and Thrive Global Development Alliance

