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MCHIP Maternal and Child Health Integrated Program

A Joint Process Documentation of the Scale-Up of the Helping Babies Breathe Initiative in Bangladesh and Malawi

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Table of Contents

Acknowledgements v
Abbreviations vi
Executive Summary vii
Introduction 1
Context of the Scale-Up of HBB in Bangladesh and Malawi 4
Methods 7
Phase One: Preparing for the Scale-Up of HBB 8
Policy Development Leading to Adoption of HBB 8
Macro-Level Planning: Development of the HBB Scale-Up Plan 10
Funding, Inputs, and Partnerships for the HBB Scale-Up 11
Roles of Key Partners 12
Adaptation of HBB for the Local Context 14
Phase Two: Implementation of the Scale-Up of HBB 16
HBB Education 16
In-Service Training 16
Worksite Practice 18
Pre-Service Education 20
HBB Equipment and Logistics Systems 21
Supervision of the Provision of HBB Services 23
Monitoring the HBB Scale-Up 24
The Malawi experience with Monitoring HBB 24
The Bangladesh experience with Monitoring HBB 25
HBB Program Evaluations as a Source of Information 25
Phase Three: Institutionalization of HBB 26
Assessing Implementation Status of HBB 26
Triangulation of HBB Evaluations and Process Documentations 29
Integration and Sustainability of HBB 29
Integration of HBB 30
Sustainability of HBB 31
Recommendations 33
Overarching Recommendation 33
Policy Development Leading to Adoption of HBB 33
Development of the HBB scale-up plan 34

Funding, Inputs and Partnerships 35
Adaptation of HBB for the Local Context 35
In-Service Training 35
Worksite Training 36
Pre-Service Education 36
HBB Equipment and Logistics 37
Supervision of HBB 37
Monitoring HBB 37
Assessing Implementation Status of HBB 38
Integration and Sustainability of HBB 38

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

Abbreviations

AAP	American Academy of Pediatrics
BSMMU	Bangabandhu Sheikh Mujib Medical University
CHAM	Christian Health Association of Malawi
CMS	Central Medical Stores
GDA	Global Development Alliance
GDP	Gross Domestic Product
HBB	Helping Babies Breathe
HDI	Human Development Index
HMIS	Health Management Information System
MCHIP	Maternal and Child Health Integrated Program
MDG	Millennium Development Goal
MOH	Ministry of Health
MOHFW	Ministry of Health and Family Welfare
MNH	Maternal and Newborn Health
NCSS	Newborn Care Surveillance System
NGO	Nongovernmental Organization
NMR	Newborn Mortality Rate
PD	Process Documentation
PSE	Pre-service Education
SBA	Skilled Birth Attendant
SUP	Scale-Up Plan
USAID	United States Agency for International Development
UNICEF	United Nations Children's Fund
USD	United States Dollars

Executive Summary

Great strides have been made in decreasing child mortality over the past two decades. Efforts to further reduce child mortality have led to a focus on newborn mortality and its causes. Almost one-quarter of newborn deaths occur due to birth asphyxia. The American Academy of Pediatrics (AAP) has developed the Helping Babies Breathe (HBB) intervention to provide guidance to health providers in low-resource settings regarding how to assist babies who are experiencing birth asphyxia. Researchers have demonstrated that HBB can reduce newborn mortality due to asphyxia in controlled field trials. Over 60 countries have introduced HBB but relatively few have attempted a national rollout. Interventions such as HBB must be implemented at scale in order to achieve impact at the population level, but this introduces a set of system-related challenges that are not faced during small-scale trials. Improved understanding of the science of scale-up is crucial to achieving population-level impact. This report aims to increase comprehension of how HBB can best be scaled up by documenting the processes that the concerned ministries and their partners followed during national rollouts of HBB in Bangladesh and Malawi from 2011 to 2013.

The potential for HBB to reduce newborn mortality in Bangladesh and Malawi varies markedly given the stark differences in the percentage of deliveries attended by skilled birth attendants (SBAs). The successful incorporation of HBB into national policy in both countries was characterized by strong local leadership, effective engagement of stakeholders, and country ownership. An inclusive approach to developing a strong partnership framework led to strong support for the rollout. Both countries developed HBB scale-up plans that documented operational plans and partners' commitments. Some aspects of the Malawi plan were not fulfilled while the Bangladesh plan did not address some important systemic components. The Bangladesh effort benefitted greatly from adequate funding which has facilitated planning and implementation of the scale-up.

In-service training has proceeded well in both countries but Malawi's decision to train only 30 percent of SBAs and then require trained providers to instruct their colleagues informally was not successful. Worksite practice of resuscitation techniques on the NeoNatalie mannequin is a crucial HBB learning method but is not being effectively practiced in either country. HBB has been successfully incorporated into pre-service education (PSE) curricula for key cadres in both countries but other aspects of PSE require further support.

It is critical to provide HBB equipment in planned quantities immediately after or even before training. Bangladesh demonstrated that HBB equipment can be successfully delivered in a complex scale-up while funding problems led Malawi to proceed with HBB training without providing full sets of equipment. Neither country has been able to support effective supervision at high coverage through the routine health system. Monitoring HBB is critical to support the scale-up but neither country has produced reliable monitoring data. HBB evaluations conducted in each country have generated the most useful data to assess the status of the rollouts. These evaluations found no evidence that HBB has resulted in improved provider performance of resuscitation during the early stages of the scale-ups. It is not clear what needs to be done to develop providers' commitment and drive to use and maintain their newfound knowledge and skills to save every newborn who does not breathe at birth.

The first phase of the HBB scale-ups in both Bangladesh and Malawi will be completed in 2014. This report documents lessons learned to date and presents general recommendations to strengthen and guide the implementation of HBB in Bangladesh and Malawi and other countries that are considering its adoption. These recommendations include the following:

Overarching recommendation

Investments in health system components that support HBB must be given priority equal to training and provision of equipment.

Policy development leading to adoption of HBB

1. The Ministry of Health and other local organizations should lead the scale-up
2. Broadly engage local implementers and other stakeholders
3. Create consensus on intervention effectiveness
4. Adopt a phased approach to scale up, including an initial pilot study

Funding, inputs, and partnerships

1. Form partnerships through an inclusive approach
2. Develop funding base founded on large, secure grants from a limited number of partners
3. Develop implementation roles for both government and nongovernment actors

In-service training

1. Formally train all currently practicing SBAs in HBB
2. Proceed with training only if full sets of equipment can be provided
3. Develop a comprehensive model for launching HBB at the district level

Worksite training

1. Develop monitored strategies to ensure that providers practice HBB at their worksites
2. Experiment and think creatively to develop an effective mentoring approach

Pre-service education

1. Move quickly to incorporate HBB into PSE curricula for all cadres that serve as SBAs.
2. Strengthen other aspects of HBB education in PSE early in the scale-up.

HBB equipment and logistics

1. Ensure funding and logistics so that equipment is provided immediately after training.
2. Ensure that essential resuscitation equipment is available both through the governments' central medical stores (for government facilities) as well as in the market (for private facilities)
3. Develop a system for facilities to replace broken or missing HBB equipment

Monitoring HBB

1. HBB programs should put in place a system for generating reliable, usable monitoring data, and then analyze, report, and use the data for program management
2. Carefully consider which indicators generate data that reliably measures program performance before adding them to the national health management information system or otherwise measuring them

Assessing implementation status of HBB

Managers of any HBB scale-up initiative should plan for periodic independent evaluations

Integration and sustainability of HBB

1. Introduce HBB vertically while simultaneously integrating the intervention into components of the existing health system
2. Be careful not to emphasize sustainability of processes over sustainability of impact

Introduction

The global drive to reduce under-five mortality and meet Millennium Development Goal (MDG) 4[1] has met with considerable success. However, achievements in lowering infant and child mortality have outpaced gains in reducing newborn mortality. The international public health community has now focused attention on newborn survival and is making extensive efforts to decrease newborn mortality.

It is ironic that a human being is at greatest risk of death at the time of his or her birth. Five to ten percent of newborns require assistance to begin breathing immediately after delivery.[2] Among the 135 million babies who are born every year, more than 700,000 die at birth while another 1.2 million are stillborn due to complications during delivery. Most of these deaths are due to birth asphyxia, estimated to cause 23 percent of newborn mortality globally.[3] Many of these deaths are avoidable; improving the quality of facility-based intrapartum care, including newborn resuscitation, may prevent up to 30 percent of intrapartum-related newborn mortality.[4]

Implementation at scale is necessary to achieve significant impact: Effective interventions must be implemented at scale in order to achieve impact at the population level. While many interventions have been shown to reduce mortality in controlled field trials, attempts to scale up these interventions in order to save a significant number of lives have introduced a fresh set of system-related challenges. Improved understanding of the science of scale-up is crucial to achieving population-level impact.

Helping Babies Breathe: Strengthening management of newborn resuscitation: Improved management of resuscitation holds great potential to reduce newborn mortality in low-resource settings. A global effort has been made in the past decade to develop effective interventions that decrease mortality due to birth asphyxia. A leading example of this effort is the Helping Babies Breathe (HBB) program developed by the American Academy of Pediatrics (AAP). HBB is a training program that teaches delivery attendants how to organize and prioritize their actions during the first minute of a newborn's life (termed the "Golden Minute" in HBB), with the focus on ensuring that the newborn is breathing properly and providing assistance if she/he is not. A field trial conducted in eight hospitals in Tanzania[5] demonstrated that HBB training supported by rigorous worksite practice resulted in decreased newborn mortality and stillbirth rates. A second trial in Karnataka, India,[6] showed that the rate of stillbirths decreased while the newborn mortality rate was maintained following the conduct of the HBB training program. A more recent study from Tanzania observed that the conduct of HBB training in a rural hospital resulted in improvements in provider performance of simulated newborn care and resuscitation but did not translate into improved clinical practice.[7]

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[1] MDG 4 is to reduce by two-thirds, between 1990 and 2015, the under-five mortality rate.
[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] Lawn J, Shibuya K, Stein C. No cry at birth: global estimates of intrapartum stillbirths and intrapartum-related neonatal deaths. *Bull World Health Organ* 2005;83:409-17.
[4] *Ibid.* 2.
[5] Msemo G et al. Newborn Mortality and Fresh Stillbirth Rates in Tanzania After Helping Babies Breathe Training. *Pediatrics* (2013);131:e353–e360.
[6] Goudar SS et al. Stillbirth and Newborn Mortality in India After Helping Babies Breathe Training. *Pediatrics* (2013);131:e344–e352.
[7] 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.

The United States Agency for International Development (USAID), in partnership with AAP, Save the Children, Laerdal Foundation, and the Eunice Kennedy Shriver National Institute of Child Health and Human Development launched a Global Development Alliance (GDA) in 2010 to support the adoption and implementation of HBB in countries around the world. Over 60 countries have introduced HBB while 18 countries have national HBB plans coordinated by the government. Maternal and Child Health Integrated Program (MCHIP), USAID's flagship maternal and newborn health (MNH) project, has played a significant role in the global spread of HBB. In the case of Bangladesh and Malawi, USAID worked with its GDA partner, AAP, to catalyze the scale-up efforts by encouraging MCHIP to provide in-country support to the scale-ups supported by AAP technical representatives. USAID also rallied assistance for the scale-ups among other HBB GDA members.

> *"Bless you for bringing HBB to our district. You have helped to save many Malawian babies"*
>
> Nurse-Midwife Technician, Malawi

Scaling up HBB—evidence from the field: Conducting national programs to take HBB to scale would appear to be an excellent opportunity for countries to substantially reduce newborn mortality but there is relatively little information on the results of programs that have attempted to roll out HBB. Two recent program evaluations from Bangladesh[8] and Malawi[9] suggest that it may be difficult to replicate results of field trials when HBB is taken to scale. Neither evaluation found evidence that the scale-up of HBB resulted in notable improvements in key outcome measures during the early stages of the HBB rollout.

Scaling up HBB—information requirements: The newborn public health community needs to learn more about scale-up in general and scaling up HBB in particular. At first glance, it may appear that HBB can save lives as a straightforward training program but it may require support from various components of the health system to achieve impact. Additional evaluations of HBB programs implemented at scale would contribute to a greater understanding of how HBB performs when it is rolled out. HBB programming efforts would also benefit from learning more about how HBB is actually taken to scale. Quantitative evaluation results will be easier to understand and interpret when they are complemented by a documentation of how HBB is implemented during scale up and what

HBB Team in Pirgonj Upazila Health Complex, Bangladesh

[8] 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, International Centre for Diarrheal Disease Research, Bangladesh. December 2013.

[9] 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.

lessons can be learned from the process.

It is for this reason that MCHIP commissioned the conduct of process documentations of the HBB scale-up efforts in Bangladesh and Malawi. These two parallel efforts, both separately as well as taken together, provide separate and comparative views of the detailed processes that were followed while scaling up HBB in two countries on different continents with very different implementation contexts.

Purpose of this report: The HBB process documentations of Bangladesh and Malawi have been reported in two separate documents and focus on describing, in comprehensive detail, the processes that were followed in each country over the first three years of the scale-up efforts. Each report is a critical examination of different elements of the scale-up efforts and presents detailed within-country analysis, country-specific lessons learned, and recommendations.

This report synthesizes the key content from the two country-specific reports by comparing and contrasting the findings and conclusions from Bangladesh and Malawi. In doing so, this document develops lessons learned and recommendations, which are broader in nature, to share with countries that are considering introducing or rolling out HBB. This report is a comparative document and does not repeat most of the details that has been presented in the country-specific reports. Readers who are interested in greater detail are referred to the Bangladesh and Malawi country reports.

Structure of the report: The overall structure of this report reflects the different phases of the process of scaling up an intervention, building on a model proposed by Bergh et al.[10] Following a description of the context of the HBB scale-up in Bangladesh and Malawi and the methodology of the process documentation, the first part of this report describes the *preparation for the scale-up*, including developing policy, planning for the scale-up, building partnerships and securing funding, and adapting HBB for the local context. The second part of the report focuses on the *implementation of the scale-up* and thus describes HBB training and education, equipment and logistics systems, and supervision and monitoring. The third part of the report documents progress towards the *institutionalization of HBB* and explores issues such as the assessment of the implementation status of HBB, integration, and sustainability of HBB. The report concludes with recommendations.

[10] Bergh AM et al. Measuring implementation progress in kangaroo mother care. *Acta Pædiatrica*, 2005; 94: 1102–1108.

Context of the Scale-Up of HBB in Bangladesh and Malawi

The scale-up of HBB takes place within a socioeconomic, cultural and public health context that is unique to each country. Understanding this context is critical as it will influence how the intervention can best be scaled up as well as the impact that it can be expected to achieve. Table 1 lists some important contextual factors for Bangladesh and Malawi that have important implications for how the scale-up of HBB should be designed and its potential for impact on newborn mortality.

Table 1. Contextual factors for Bangladesh and Malawi

#	Factor	Bangladesh	Malawi
1	Population (million)	150	15
2	Gross Domestic Product (GDP) (year; rank out of 187)[11]	USD 1,963 (2012; 156)	USD 848 (2012; 181)
3	HDI rank among 187 countries[12]	146	170
4	Under 5mortality rate Infant mortality rate Newborn mortality rate (NMR) (deaths per 1,000 live births)[13]	46 37 26	83 53 27
5	Percent NMR due to asphyxia	21	28[14]
6	Live births per year[15] Crude birth rate (per 1,000 people)[16]	3,016,000 21	686,000 40
7	Newborn deaths due to asphyxia	16,467 (3,016 x 26 x 0.21)	5,186 (686 x 27 x 0.28)
8	Newborn deaths due to asphyxia attended by skilled birth attendant (SBA)	5,269 (16,467 x 0.32)	3,682 (5,186 x 0.71)
9	Newborn deaths due to asphyxia attended by SBA whose salary is paid by government	2,470 (5,269 x (15/32))	3,682 (3,682 x (71/71))
10	% pregnant women who receive antenatal care from a trained provider at least once during pregnancy	55	95
11	% deliveries attended by SBA • Physician • Nurse-midwife • Other	32 22 9 1	71 11 61 -

[11] World Economic Outlook Database-October 2013, International Monetary Fund.
[12] http://hdrstats.undp.org/en/countries
[13] http://www.unicef.org/infobycountry
[14] Zimba E et al. Newborn survival in Malawi: a decade of change and future implications. *Health Policy and Planning* 2012;27:iii88–iii103
[15] http://www.countdown2015mnch.org/documents/2013Report
[16] http://data.worldbank.org/indicator/SP.DYN.CBRT.IN/countries

#	Factor	Bangladesh	Malawi
12	% deliveries taking place in: • Government facility • Religious facility • NGO facility • Private facility • Home (SBA-attended) • Home (other)	 12 - 2 15 3 68	 57 16 - - - 27
13	Data describing quality of resuscitation management	1.7 out of 7 (*Mean number of correct bag-and-mask skills demonstrated by participants during simulated resuscitation prior to training*)[17]	1.6 out of 6 *(Knowledge of steps to take if baby does not begin to breathe)*[18]

Note: Unreferenced values in table above from Bangladesh DHS2011[19] and Malawi DHS2010.[20] Calculations in rows 8 and 9 assume that deaths due to asphyxia are equally distributed across SBA-attended and non-attended deliveries. USD = United States Dollars.

Both Bangladesh and Malawi are countries that are on track to achieve MDG4 and are thus countries with a track record of progress in public health. A review of the factors listed in Table 1 reveals opportunities and challenges. There is evidence in both countries that birth attendants have inadequate knowledge or skills in resuscitation and thus HBB holds the potential for improving performance of resuscitation. Despite being more prosperous (based on GDP), Bangladeshis demonstrate a lower demand for maternal health care than Malawians. Given the high preference for private delivery services in Bangladesh, the data suggest some dissatisfaction with maternal health services provided by the government.

Health center in Dedza district, Malawi

Bangladesh faces a number of issues when implementing HBB. The large population and high number of births create notable potential for improved resuscitation management to save lives. However, the percentage of deliveries that are attended by a skilled birth attendant (SBA) is low, which limits HBB's potential for impact. Another factor that limits the potential for HBB to save newborn lives is Bangladeshis' preference for delivering in private facilities, where it is not clear how strongly government or professional bodies can influence practice.

[17] Helping Babies Breathe Initiative: Building Skill in Birth Asphyxia Management in Bangladesh: Process Documentation and Final Report. Save the Children Federation, Inc. and Bangabandhu Sheikh Mujib Medical University. 2010.
[18] Malawi 2010 EmONC Needs Assessment: Final Report. Ministry of Health, Republic of Malawi. 2010.
[19] National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International. 2013. *Bangladesh Demographic and Health Survey (DHS) 2011*. Dhaka, Bangladesh and Calverton, Maryland, USA: NIPORT, Mitra and Associates and ICF International.
[20] National Statistical Office (NSO) and ICF Macro. 2011. *Malawi Demographic and Health Survey 2010*. Zomba, Malawi, and Calverton, Maryland, USA: NSO and ICF Macro.

The driving rationale for introducing and implementing HBB is to save newborn lives. The potential for HBB to save a large number of newborn lives in a given country is dependent on factors that include the total number of births, the newborn mortality rate due to asphyxia, the percentage of births attended by an SBA, and the degree to which SBAs can be influenced to follow HBB procedures. Malawi has one-tenth of the population of Bangladesh but holds the potential to have a trained, government-employed SBA present to manage a higher number of asphyxia cases than in Bangladesh (see Row 9 in Table 1) due to factors that include a higher crude birth rate, much higher rates of facility delivery and SBA attendance at birth, and a greater proportion of active SBAs being employed by the government.

Methods

An independent consultant (Consultant) was chosen to lead the conduct of the process documentation (PD) in order to bring a critical, external perspective to the PD. The Consultant was supported by MCHIP and Save the Children staff members in Bangladesh, Malawi, and Washington, DC. The MCHIP Newborn Health Advisor from the Washington, DC, office accompanied the Consultant on visits to Bangladesh and Malawi, participated in all interviews and supported data analysis. Other staff members from MCHIP and Save the Children provided support, information, and feedback on various drafts of the report. The Consultant and the MCHIP Newborn Health Advisor traveled to Malawi from August 26 to September 6, 2013, and to Bangladesh from September 14 to 26, 2013, to gather information for the PD. The content of this report represents the Consultant's findings and analysis of the information that was collected. Details regarding data collection methods are presented below.

Interview guides and process: Guides were prepared for all interviews. The Consultant and the Newborn Health Advisor conducted all interviews and took comprehensive notes on the computer. All interviews were conducted in confidentiality and members of the Save the Children and/or MCHIP country teams were not present during the interviews.

Respondent categories: The respondents who were interviewed for the process documentation in both Bangladesh and Malawi included the following: Ministry of Health (MOH) officials at the national, regional, district and sub-district levels (n = 13/6 in Bangladesh/Malawi); representatives from regulatory and academic institutions, including nursing and midwife councils, nursing colleges, and medical colleges (n = 11/3); health workers and administrators currently providing services at various levels of the health system (n = 52/15); representatives from partner organizations, including Save the Children (n = 12/7); and, researchers serving as Principal Investigators in the ongoing HBB evaluations (n = 2/2). Respondents were selected through consultations between the Consultant, the MCHIP Newborn Health Advisor, and staff members of the Save the Children country offices.

Facility visits: In Malawi the Consultant and the MCHIP Newborn Health Advisor visited two health centers in Dedza district; a health center and a central hospital in Mzimba district; a district hospital and a health center in Nkhotakota district; and Bwaila Maternity Hospital and Kamuzu Central Hospital Hospital in Lilongwe. The facilities that were visited in Dedza, Mzimba, and Nkhotakota districts were considered to be facilities where HBB was relative well-established. In Bangladesh the Consultant and the Newborn Health Advisor visited the Pirojgunj Upazilla Health Complex in Tangail district; the district hospital and a family welfare clinic in Gaibandha district; and the maternal child welfare clinic, Rangpur Medical College, and Smiling Sun Clinic in Rangpur district. The districts and facilities that were visited in both countries were chosen by Save the Children staff members in consultation with the Consultant and the MCHIP Newborn Health Advisor. The facilities that were visited in Malawi were considered to be facilities where HBB was relative well-established. Although a limited number of facilities were visited in each country, conclusions stated in this report that derive from facility visits were supported by information collected during interviews with key informants.

Audits: The Consultant and the MCHIP Newborn Health Advisor conducted structured audits of the availability and condition of resuscitation equipment and audited facility records of newborns with birth asphyxia during visits to health facilities.

Document review: The Consultant reviewed a wide range of reports and documents pertaining to HBB at the global and country levels as part of the PD.

Phase One: Preparing for the Scale-Up of HBB

Preparation for the scale-up is the first phase of the process of rolling out HBB. This is the formative period preceding actual implementation when leaders of the scale-up initiative create awareness, foster ownership, and develop commitment among partners to implement HBB. This phase includes developing policy, drawing up detailed plans for the scale-up, constructing partnerships and obtaining funding, and adapting HBB for the local context.

POLICY DEVELOPMENT LEADING TO ADOPTION OF HBB

Country-based stakeholders that are considering the official adoption of HBB as a national-level initiative to strengthen resuscitation management will begin by developing policies to support their efforts. Crucial steps in the process of policy development include creating awareness, developing leadership, building consensus, and formulating policy.

Both Bangladesh and Malawi followed similar and successful paths developing policy regarding HBB. MCHIP and Save the Children played a catalytic role at the outset of the process in both countries by highlighting the need for improved resuscitation management of newborns in policy circles while funding activities such as pilot testing of HBB and stakeholders' participation in HBB Master Trainings to support building awareness and the development of leadership. The government and other public health organizations quickly bought into the approach and the MOH in Malawi and Ministry of Health and Family Welfare (MOHFW) in Bangladesh) provided strong leadership for the policy development process. Both countries now exhibit strong country ownership of HBB and have champions of HBB in key government positions (the Minister of Health and Family Welfare in Bangladesh and the Secretary of Health in Malawi). Strong leadership from academia was also an important factor in Bangladesh.

Local research data played an important part in the development of consensus that HBB was needed in both countries. In Malawi, a study of emergency obstetric and newborn care[21] showed that providers' knowledge of resuscitation management was low while in Bangladesh, MCHIP funded a pilot study of HBB[22] conducted by Bangabandhu Sheikh Mujib Medical University (BSMMU). The latter study demonstrated the low level of providers' skills in resuscitation management as well as their improvement following participation in the HBB training. Respondents to the PD in both countries cited these studies as having generated considerable political will and convincing local stakeholders of the need to take action to improve management of birth asphyxia.

It should be noted that the HBB Pilot Study in Bangladesh was not an operational study that assessed outcomes over time in a real-world, routine health systems context where various components such as equipment provision or supervision and mentoring of HBB were experimented with. As such, HBB was adopted as policy in both Bangladesh and Malawi without any hard evidence that it would achieve intended results once it was scaled up. Policy makers instead relied on the results of the field trials and the logic of the intervention while adopting the HBB approach as official policy.

Bangladesh and Malawi both held high-profile events to highlight the problem of birth asphyxia and spur movement towards developing consensus across all stakeholder groups that HBB should be adopted as policy. The MOH in Malawi convened a stakeholders meeting prior to adopting HBB as government policy, which was attended by representatives of all important local stakeholder groups. This forum was used both to advocate for the need for action as well as to

[21] *Ibid.* 17.
[22] *Ibid.* 16.

build consensus around HBB as the intervention that should be used to combat the problem. The dissemination function for the HBB Pilot Study in Bangladesh accomplished a similar objective.

Each country followed an inclusive, consultative process to develop and approve official government policy regarding HBB that involved engaging local stakeholders, technical experts, and development partners. HBB is now national policy in both Bangladesh and Malawi and is included in policy and strategic documents as they are revised periodically.

Lessons learned: Policy development leading to adoption of HBB

The process of incorporating HBB into national policy in Bangladesh and Malawi was a successful effort that can serve as a model for other countries. Yamey has developed a framework for explaining effective scale-up that identifies attributes of successful scale-up efforts.[23] This report will present lessons learned from the Bangladesh and Malawi process documentations throughout this document that correspond with characteristics identified by Yamey. Several of these attributes pertain to the process of including HBB into policy in both Bangladesh and Malawi and are presented in Box 1.

Box 1. Attributes of a successful scale-up: Strong leadership, engaging stakeholders, country ownership, consensus on intervention effectiveness, political will, and phased scale-up

1. Strong leadership: Local leadership was strong. The governments led the process, spearheaded by local champions, who worked hand in hand with key partners to achieve consensus. External partners played a key role catalyzing and supporting the process.
2. Engaging local implementers and other stakeholders: Leaders of the HBB initiatives engaged all relevant local stakeholder groups and encouraged stakeholder input in the policy development process. High-profile events created awareness regarding the need for HBB and developed commitment among stakeholders.
3. Country ownership and MOH-donor relationship: Country ownership of the HBB initiative is strong in both countries. Yamey notes that country ownership is most effectively fostered when the host country controls the policy and programming agendas, as is the case in Bangladesh and Malawi, and is not dictated to by partners or donors.
4. Consensus on intervention effectiveness: Consensus among stakeholders was achieved through complementary processes that include (i) local research studies documenting the need to improve resuscitation practices and (in Bangladesh) improvement in providers' knowledge and skills following a pilot test of HBB; (ii) sharing results of a well-known field trial from Tanzania that documents the effectiveness of HBB; (iii) advocacy by local champions for adoption of HBB; and (iv) in-country support from AAP's technical representatives. All of these factors together convinced stakeholders in Bangladesh and Malawi of the need to introduce HBB.
5. Political will and national policies: Political will can be defined as support from political leaders that results in policy change. The inclusion of HBB in existing policy is a concrete example of political will.
6. Phased approaches to scale up: One trait of successful scale-up that Yamey cites, which was not fully present in Bangladesh and Malawi, is the concept of basing the scale-up process on an initial operational pilot and then going to scale in a phased manner. While both countries did take HBB to scale in phases, neither country conducted a full-scale field-level pilot of HBB prior to initiating scale-up. HBB program planners made a trade-off when they opted to proceed with the rollout without going through an initial learning phase, choosing potential immediate impact at scale over basing the scale-up on lessons that a pilot might have taught. Given the many challenges that the HBB scale-up has faced in both countries, and evaluation results (presented in Section 12 below) from the early stages of the scale-up, which show that HBB has not achieved impact, it may have been preferable to introduce HBB initially through a pilot phase in a selected number of districts and only proceeding to a full rollout following review of pilot results.

[23] Yamey G (2011). Scaling Up Global Health Interventions: A Proposed Framework for Success. *PLoS Med* 8(6): e1001049. doi:10.1371/journal.pmed.1001049

MACRO-LEVEL PLANNING: DEVELOPMENT OF THE HBB SCALE-UP PLAN

The development and documentation of the HBB scale-up plan (SUP) represents an opportunity for countries to plan for the scale-up in concrete terms. This process allows the government and its partners to agree upon program objectives, address operational issues, and define the roles they will play in the effort, and commit to providing support. Planning for a national scale-up is facilitated if dedicated funding is in place to support the entire rollout.

Both Malawi and Bangladesh developed documented SUPs. Reflecting the fact that HBB is primarily a training intervention, much of the content of the SUPs was devoted to plans regarding training, including training design, the number and types of providers to be trained per district and how they would be selected, which facilities would be prioritized within a district for in-service training, how to sequence districts in a phase-wise approach to rolling out HBB, and how HBB would be incorporated into pre-service education programs.

The two countries took somewhat different approaches to documenting the SUP. The Malawi SUP was quite detailed and ambitious in some respects. The SUP was framed around three objectives that focused on improving providers' knowledge and skills, ensuring availability of resuscitation equipment, and strengthening the monitoring of maternal and newborn care, including resuscitation management. Major activities were listed by objective. Various partners were to support HBB training in specified districts. Training was not funded in all districts and thus training activities in some districts were left to be supported by "other partners," to be determined in the future. The Malawi MOH committed to purchasing *service* resuscitation equipment (i.e., resuscitation equipment to be used in the delivery wards) while partners committed to providing *training* equipment (i.e., resuscitation equipment including the NeoNatalie mannequin that providers use to practice and maintain their resuscitation skills during and after the training). Due to unforeseen financial constraints, the MOH was unable to fill its commitment, an unfortunate occurrence that led to chronic equipment shortages during the rollout. The Malawi SUP contained considerable detail regarding how supervision of providers practicing HBB would be carried out—plans that seem somewhat unrealistic given the constraints currently faced by the Malawian health system in providing routine supervisory support to health workers.

The planning effort for the HBB scale-up in Bangladesh was facilitated by a large grant provided by USAID that allowed HBB managers to plan for a uniform, single-team approach to rolling out HBB across the country. The Bangladesh HBB SUP was less detailed than the Malawi SUP and limited its specific plans to activities for which comprehensive funding was guaranteed. One of the strengths of the Bangladesh SUP was that most or all of what was planned was accomplished. The most detailed section of the SUP describes the institutional arrangements and the roles of major partners. The BSMMU was selected to lead the technical implementation of the scale-up, including adaptation of the HBB curriculum and designing and conducting the HBB training program. The SUP makes no mention of how the HBB initiative planned to approach supervision, mentoring, or monitoring other than to note that current strategies need to be reviewed to incorporate the needs of HBB. In retrospect, these are three components where the scale-up effort in Bangladesh has faced shortcomings. A criticism of the Bangladesh SUP might be that it failed to address key systemic elements of the scale-up that, if dealt with more effectively during the planning process, might have had a positive impact on the scale-up.

In summary, the Malawi SUP was more comprehensive than the Bangladesh SUP and showed a better sense of what is required in terms of integration and activities to support multiple components of the initiative during the scale-up of HBB. Its weakness was that key aspects of

the SUP were not implemented, primarily due to funding constraints. In turn, one of the strengths of the Bangladesh SUP was that most or all of what was planned was actually accomplished, while its primary weakness was that key support components, such as the health management information system (HMIS), supervision and quality assurance, and logistics management, were not addressed in any detail.

Lessons learned: development of the HBB scale-up plan

- *Documentation of realistic commitments*: The development of the SUP is an excellent opportunity to document partners' commitments regarding their roles to support the scale-up. Caution must be exerted to ensure that the SUP is realistic and that all commitments can be met.
- *Addressing systemic components in the SUP*: There are benefits to developing a detailed SUP that addresses all components of the scale-up, including supervision, mentoring, and monitoring. Even though HBB is a training-focused intervention, it is clear that systemic components must be addressed for providers to significantly improve their management of newborn resuscitation.
- *Full funding primarily through a single grant is advantageous*: A fully-funded effort to scale-up HBB that is centrally coordinated by a strong governmental institution, such as BSMMU, greatly facilitates both planning as well as subsequent adherence to the plan.

FUNDING, INPUTS, AND PARTNERSHIPS FOR THE HBB SCALE-UP

The national scale-up of a multi-faceted intervention such as HBB will require funding and other inputs from a number of partners to complement and support the central effort of the government. A review of the experiences of the Malawi and Bangladesh scale-up efforts regarding partnerships offers a number of lessons in this regard.

An important aspect of the role of partners in the Malawi HBB scale-up has been that many partners supported the introduction of HBB in geographical areas (districts) rather than supporting HBB by intervention components such as training, equipment, etc.. Partners often provided this geographically-defined support through ongoing projects that had objectives significantly broader than HBB. As a result, the support provided by some partners to HBB in Malawi has been defined and limited by project cycles and has even required that support for HBB in some districts be transferred from one project to another. HBB managers at the national level note that it has been a challenge to standardize the approach to implementing HBB across so many partners. Some partners faced funding limitations, which meant that they could only support part of the HBB rollout (e.g., training, or equipment, or monitoring) in selected districts. The lack of a single central grant to fund key components of the scale-up, coupled with a partnership framework that does not have a single dominant implementing unit, has resulted in a rollout process in Malawi that was somewhat fragmented. It should be noted, however, that the lack of a single centrally-funded grant to support the rollout of HBB is likely to be the norm in most countries unless donors change their current approach to funding initiatives within mandated geographically-defined project areas.

The major partners to the HBB scale-up in Bangladesh were fewer in number than in Malawi. The magnitude of their support was large and was defined by component (e.g., training, equipment, tax payment on equipment, evaluation) rather than by geographical area. All partners met their commitments, facilitating the implementation of the scale-up.

ROLES OF KEY PARTNERS

The text below outlines the roles of key organizations and partners to the HBB scale-up efforts in Malawi and Bangladesh. More specific details regarding partners' contributions can be found in the country-specific reports.

- **Ministry of Health Malawi and Ministry of Health and Family Welfare Bangladesh**: The two ministries have overall responsibility for scaling up HBB in their respective countries. The following activities are performed by one or both ministries with regards to HBB: develop policy; provide and maintain facilities, human resources, and infrastructure; conduct trainings for top-level MOH and district managers and central hospital managers; conduct supervision and management at national, district, and community levels; guide and conduct pre-service education (which includes HBB) for all health worker cadres; collect information and manage data; provide venues and related utility and management support for HBB in-service training and other meetings or functions; pay value-added tax and other taxes for all off-shore procurement of HBB equipment; and, other health system functions.
- **Save the Children**: *(through funds provided by Johnson & Johnson, Saving Newborn Lives, and Save the Children-Italy)* Together with the MOH/MOHFW, Save the Children has assumed overarching responsibility in both countries for supporting the national scale-up of HBB while coordinating and operationalizing support from different funding sources and programs. Save the Children has one or more staff members dedicated full-time to providing assistance to varied aspects of the HBB rollouts in both countries, including support for in-service training and pre-service education, equipment procurement, monitoring and evaluation, and the conduct of review and stakeholder meetings.
- **USAID**: USAID has played a catalytic role at the global level through its co-leadership role with AAP in founding the HBB GDA, bringing other partners on board, and rallying support for the HBB scale-up efforts in Bangladesh and Malawi. USAID has also provided extensive funding for HBB in both countries through a specific grant dedicated to HBB (Bangladesh) as well as through MCHIP (both countries) and bilateral maternal and child health projects such as the Support for Service Delivering Integration project (Malawi) and the MaMoni Health System Strengthening Project (Bangladesh). USAID funds have been used to support various HBB-related activities that include training, equipment procurement, and support to monitoring and supervision systems.
- **UNICEF**: The United Nations Children's Fund (UNICEF) has supported provider training in two districts in Malawi and provided funding to purchase HBB equipment for 29 districts in Bangladesh. UNICEF has also played an important role in both countries providing technical support during the design phase and the policy development process that supported the HBB scale-up.
- **AAP**: AAP developed the HBB curriculum and materials and supported early field trials to test its feasibility. AAP has catalyzed the establishment of the HBB GDA at the global level through its co-leadership role with USAID. AAP provided training equipment for initial HBB trainings in Malawi. Professor George Little (Malawi) and Dr. Nalini Singhal (Bangladesh) have provided pro bono technical support to the HBB scale-up efforts as representatives of AAP.
- **BSMMU** (Bangladesh): BSSMU was sub-contracted by Save the Children to conduct activities that include reviewing and adapting HBB curricula; designing, conducting, and managing the national HBB training program; providing administrative, supervision and monitoring support to district-level HBB trainings; ensuring the timely procurement of HBB equipment and facilitating its delivery to the district and facility level; and providing other support to the scale-up as required.

- **Laerdal Foundation**: The Laerdal Foundation provided funding for the evaluation of the HBB scale-up in Bangladesh and also made HBB equipment available at a reduced price for the HBB scale-up in both Bangladesh and Malawi.
- **Professional societies**: Professional societies and bodies in both Bangladesh and Malawi have served as key partners in the HBB scale-up efforts by actively participating in the discussions regarding the introduction of HBB, reviewing and adapting HBB materials, and contributing master trainers to the HBB training effort.
- **Evaluation agencies**: The Johns Hopkins University Institute for International Programs has conducted the first round of an evaluation of the HBB scale-up in Malawi through MCHIP financing. It is in the process of completing the second round of the evaluation. The International Centre for Diarrheal Disease Research, Bangladesh has conducted an evaluation of the HBB scale-up in Bangladesh through a grant provided by Laerdal Foundation and managed by Save the Children.
- **Local nongovernmental organizations and religious organizations**: (NGOs: Bangladesh; religious organizations: Malawi) A number of NGOs that provide delivery services in Bangladesh collaborated with the HBB initiative to train their delivery staff to provide HBB services. In Malawi, the Christian Health Association of Malawi (CHAM) provides health services through an extensive network of health facilities that are financed in part by the MOH. Health providers working in CHAM facilities provide delivery services, including resuscitation services for newborns, and participated in the HBB rollout. The Latter Day Saints Charities has procured equipment and supports HBB training, monitoring and evaluation (M&E) activities in two districts in Malawi.

Lessons learned: Funding, inputs, and partnerships

- **Inclusive approach to forming partnerships**: Forming a strong partnership framework is a critical step in laying the foundation for a smooth rollout of HBB. Indeed, it is difficult to envision HBB being taken to scale without strong partner support in almost any country. Both Malawi and Bangladesh focused on forming partnerships with all potential stakeholder groups early in the HBB initiative. An inclusive approach to forming partnerships is key to securing support and avoiding opposition to the intervention at a later date.
- **Large grants from a limited number of partners facilitates smooth implementation**: The funding model of the HBB initiative in Bangladesh (i.e., a small group of partners providing dedicated funding for the entire scale-up effort, with full funding secured prior to commencing the scale-up) has allowed the implementation of the scale-up there to proceed smoothly. In comparison, the HBB program in Malawi has made a laudable effort to roll out HBB based on a more fragile funding base, but the quality of the implementation of the rollout has suffered as a result.
- **Funding commitments must be realistic**: While a major goal for funding any new initiative will be for the host country government to eventually provide full funding through the regular budget, governments should be encouraged to make realistic commitments based on available funds in order to avoid over-commitment. Care must be taken during rollouts to ensure that commitments made by governments—and indeed all partners—can be met. If there are concerns about any commitments being met, these should be factored into the design and development of the rollout plan.

A fourth lesson learned regarding funding, inputs, and partnerships is related to one of the attributes of successful scale-up identified by Yamey—the use of state and non-state actors as implementers, which is presented in Box 2.

Box 2. Attributes of a successful scale-up: Using state and non-state actors as implementers

Government and non-governmental actors each bring unique perspectives and attributes to scale-up efforts; when they work together effectively their achievements go beyond what either group could achieve working alone. This proved true in the context of the HBB in both countries, where the two groups worked together effectively, with the government providing overall leadership and a service delivery framework while the non-governmental actors supported the government with intensive support in implementation.

ADAPTATION OF HBB FOR THE LOCAL CONTEXT

AAP has developed a copyrighted core set of training materials and job aids to support the implementation of HBB, including the *HBB Facilitator Flip Chart*, the *HBB Action Plan*, and the *HBB Learner Workbook*. AAP revises the HBB materials every five years. Countries that wish to use HBB materials are encouraged to adapt them for local circumstances but all proposed changes must be approved by AAP in order to ensure that the technical integrity of the HBB methodology is maintained.

Malawi and Bangladesh took different approaches to adapting HBB for the local context. Malawi did not adapt the core HBB approach and materials and is essentially using them in their original form. Key stakeholders in Malawi stated that the rationale for not revising the materials was that HBB methods represented "a more organized approach to resuscitation and management of the first minute of birth than we had before" rather than being a new or different approach.

The HBB Team in Bangladesh translated the core HBB materials into Bangla language and also proposed a number of revisions and additions to the materials. The proposed changes included adapting the core HBB materials to place them more in the context of comprehensive essential newborn care, modifying the standard HBB approach to cord cutting due to local practices and history, strengthening the training materials with regards to cleaning resuscitation equipment, and linking HBB with resuscitation protocols for the tertiary level (i.e., advanced management of asphyxia following the Golden Minute), including developing instructional materials to support the linkage. AAP approved the revision with regards to cord cutting and requested the HBB Team to include all other changes in the materials as supplementary materials and propose the revisions and additions to AAP for consideration during the next revision cycle in 2016.

Lessons learned: Adaptation of HBB for the local context

The key lesson learned from the HBB scale-ups regarding the adaptation of HBB for the local context matches well with one of the attributes of successful scale-up as identified by Yamey. This lesson learned is discussed in Box 3.

Box 3. Attributes of a successful scale-up: **Tailoring scale-up to the local situation**

Yamey suggests that granting local implementers freedom to modify the intervention model to best fit the local situation increases the chances for a successful scale-up. While protecting the core content of HBB from adaptation, the AAP allows coun Yamey suggests that granting local implementers freedom to modify the intervention model to best fit the local situation increases the chances for a successful scale-up. While protecting the core content of HBB from adaptation, the AAP allows countries considerable freedom to incorporate supplementary adaptations to the HBB approach and materials. The Bangladesh HBB Team made considerable effort to review the HBB approach and suggest modifications to the HBB materials that they felt would strengthen the effectiveness of the intervention. AAP's willingness to consider all modifications and allow some of them is a sign of the strength of the collaborative partnership between AAP and host countries. The Malawi experience with adaptation of the HBB materials demonstrates that HBB can be successfully used as is, especially in countries where English is widely spoken among the health community. tries considerable freedom to incorporate supplementary adaptations to the HBB approach and materials. The Bangladesh HBB Team made considerable effort to review the HBB approach and suggest modifications to the HBB materials that they felt would strengthen the effectiveness of the intervention. AAP's willingness to consider all modifications and allow some of them is a sign of the strength of the collaborative partnership between AAP and host countries. The Malawi experience with adaptation of the HBB materials demonstrates that HBB can be successfully used as is, especially in countries where English is widely spoken among the health community.

Phase Two: Implementation of the Scale-Up of HBB

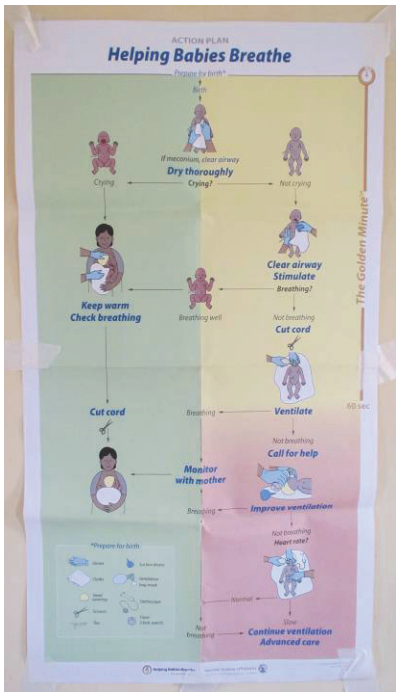
Implementation of the scale-up represents the second phase of rolling out HBB. Now that ownership has been fostered and plans have been made, this is the period when planned activities are implemented and providers begin to practice HBB. This phase includes a description of how HBB educational activities have been implemented, equipment has been procured and distributed, and supervision and monitoring activities have been carried out.

HBB EDUCATION

HBB educational activities can be broadly divided into three categories: in-service training (IST), worksite training, and pre-service education (PSE). Each of these is described below.

In-service training

The HBB approach: The two-day, competency-based HBB educational module is at the core of the HBB approach. At its essence, HBB is a framework for organizing and prioritizing a provider's actions during the first minute of a newborn's life (termed the "Golden Minute" in HBB), with the focus on ensuring that the newborn is breathing properly and providing basic assistance if she/he is not. More advanced resuscitation techniques such as cardiac massage are not taught under HBB and providers are instructed to not take an Apgar score during the Golden Minute. The HBB training is designed to present this new framework using an interactive, participatory approach in a structured environment where participants can become proficient using the equipment and job aids that facilitate the HBB approach. Key tools and job aids used during the training include the HBB Facilitator Flip Chart, the HBB Action Plan (see photo) and the HBB Learner Workbook. A trainer-to-participant ratio of 1:4 or 1:6 and a paired learning approach[24] are recommended. Facilitators of the HBB in-service training in Malawi and Bangladesh follow all aspects of the recommended training methods and approach, including the use of paired learning techniques during the training.



HBB Action Plan on wall in Malawi during training

Cascade training approach: HBB is taught to health workers who are currently providing delivery services through an in-service cascade training design. Both Malawi and Bangladesh have created cadres of master trainers who in turn train District trainers who then train service providers within districts. Bangladesh has developed an additional cadre of trainers designated as core trainers (senior, influential physicians) who trained the master trainers and provide oversight to the HBB training program.

Providers' impressions of HBB: Providers in both countries stated that the HBB methodology is similar to the approach to resuscitation management they had been taught previously. But, they said that HBB provides a clear, standard approach for managing a newborn during the

[24] The paired learning model is a technique through which two HBB training participants pair up to practice resuscitation using a mannequin so that they can learn from and teach each other. Using this technique, learners work together in pairs, with one learner taking the role of the birth attendant and the other learner controlling the newborn simulator. Learners then switch roles and practice again. In this way, learners become teachers, providing feedback on skills to one another.

Golden Minute and simplified resuscitation procedures that should be followed for those newborns that require assistance breathing. All providers and health officials who were interviewed voiced positive impressions regarding HBB.

Rolling out HBB at the district level: Managers of the HBB scale-up developed a standard approach to roll out HBB in a new district. Both Malawi and Bangladesh created similar procedures (described in the respective country reports) for developing District trainers and for orienting district public health officials to the HBB intervention and gaining their cooperation to organize the rollout. The HBB program in Bangladesh recruits District trainers from all district-level and sub-district-level health facilities within a district, an approach that creates a network of HBB champions in facilities across the district, thus facilitating the potential for the trainers to serve as future mentors. master trainers in both countries attend HBB trainings to observe District trainers' performance, clarify questions, and provide feedback.

> *"The HBB technique is structured and efficient. Prior to HBB, once the baby came out of the mother, our technique was to panic."*
>
> Senior Nurse, Malawi

Selection of providers for training: When designing HBB training program, managers must determine who will be trained—which cadres, from which sectors, and what percentage of eligible providers. HBB managers in Bangladesh and Malawi faced very different contexts when making this determination. The HBB program in Bangladesh decided to universally train all SBAs—both facility and community-based—who work in the government health services. The Bangladesh program has also trained many SBAs from the NGO health sector and is in the process of training eligible providers from the private sector.

HBB in-service training in Pirgonj Upazila, Health Complex, Bangladesh

Due to financial limitations, the HBB program in Malawi decided to train only 30 SBAs per district (later changed to 30 percent of SBAs per district) and at least one provider per facility. While some districts have been able to train a higher percentage of providers, there remains a substantial percentage of SBAs currently working in delivery wards who have not been formally trained in HBB. Providers who have been trained in HBB are told to return to their own facilities and train their coworkers in HBB but this approach appears to have generated little enthusiasm and has not been as successful as was envisioned. Nurse-Midwife Technicians have continued to be prioritized for participation in HBB training as they perform the vast majority of deliveries. Other types of providers, including anesthetists, pediatricians and obstetricians, are also trained once adequate coverage of Nurse-Midwife Technicians has been achieved. Providers from facilities run by the government and CHAM, which together perform over 99 percent of facility deliveries in Malawi, receive equal priority for participation in training.

Lessons learned: In-service training

- *HBB educational module is appreciated*: The HBB educational module was well-received by trainers and participants alike and was a highlight of the HBB intervention.

- *Problems ensue when all SBAs are not trained in HBB*: Malawi's decision to formally train 30 percent of SBAs within a district and then require them to informally train their worksite colleagues in HBB does not appear to have been successful. Untrained providers do not appear to have enthusiastically participated in informal training and the effectiveness of the rollout may have suffered as a result. The advantage of the Malawi approach is that, given funding limitations, it has allowed HBB to be introduced in more districts than would have been possible if all providers had been trained.

Yamey notes that it is critical to engage the target group of an intervention in an effective manner if the scale-up is to achieve success. Resuscitation is a technical procedure that SBAs use in emergencies according to the need, which they determine. As such, HBB is not a service or approach that community members will demand; the target groups that need to be convinced to adopt it are SBAs and their administrators working at the district and facility levels. This lesson learned is discussed in Box 4.

Box 4. Attributes of a successful scale-up: An engaged, "activated" community

Bangladesh and Malawi demonstrated that HBB managers can engage and activate the district-level public health community through the manner in which HBB is introduced into a new district. Their efforts have been guided by two strategies:

1. The first strategy has been to recruit trainers from the pool of senior providers at key facilities throughout the district so as to create a district-based network of trainers/mentors. The HBB program in Bangladesh trains district trainers immediately prior to the rollout so that they are fresh going into the provider trainings.
2. The second strategy is to conduct a district-level orientation/planning meeting immediately prior to the initiation of the HBB training that is attended by district health officials and senior health providers. This meeting engages district public health leaders, creates ownership for HBB, and is used to plan for the district rollout.

Worksite practice

Newborn resuscitation is a vital lifesaving skill but it is used relatively rarely in the delivery ward by individual providers—especially in countries such as Bangladesh with low levels of facility deliveries. For this reason, all providers who are trained in HBB are expected to practice their resuscitation techniques at their worksites using the NeoNatalie mannequin in order to maintain their ability to resuscitate newborns when required. Managers of the HBB initiative in Malawi and Bangladesh considered different approaches to encouraging worksite training at the beginning of the scale-up. They noted that in the oft-cited field trial[25] that has shown HBB to have a positive impact on birth asphyxia outcomes, worksite training is highly structured (each provider practiced resuscitation at the beginning of every shift). They considered this approach to be unrealistic to implement in a country-wide scale-up through government health services.

Instructions to providers regarding worksite training: HBB managers in both countries decided to tell providers who had been trained in HBB that they should periodically join with their coworkers at their worksites and take turns practicing resuscitation using the NeoNatalie mannequin through a paired learning approach. SBAs who have taken the HBB training in Malawi are told to return to their worksites and share their newfound knowledge and skills by informally teaching their co-workers (i.e., SBAs who have not been trained in HBB).

Practice at the worksite: Relatively few providers in either country report that they practice HBB techniques at their worksite using the NeoNatalie mannequin. In facilities where the delivery case load is high, some providers state that they practice HBB techniques adequately

[25] *Ibid.* 5.

while managing deliveries and do not need to practice on the mannequin. No providers in either country mentioned participating in paired learning for HBB at their worksites and no providers reported regular practice of resuscitation at set times in their facilities, even though this is a key learning methodology promoted by the HBB training approach.

Availability of HBB practice equipment: All facilities in Bangladesh that were visited by the PD Team reported that they had received HBB practice equipment immediately following training or shortly thereafter. Some providers reported that the equipment is under the control of senior health providers and they are unable to access it. Some HBB managers in Bangladesh report that they have visited many health facilities where the practice equipment is still in its original packaging and has never been used. In Malawi, training equipment was provided immediately after training in 20 of the 26 districts where HBB has been introduced. This training equipment has been diverted to the maternity ward in many facilities as service equipment was not provided in a timely manner. This compromised the ability of health providers to share and practice their skills to provide quality resuscitation services following the HBB training.

HBB program efforts to improve worksite training: HBB program managers in Bangladesh acknowledge that worksite practice of HBB is a weak aspect of the HBB initiative and have made efforts to develop innovative approaches to strengthen this activity within the MOHFW system. A refresher training approach has been developed that is gradually being implemented on a monthly basis at district and sub-district-level health facilities throughout the country. Under this approach, one-third of the health providers attending the regular monthly meeting will participate in a 60–90 minute session where key aspects of HBB resuscitation management will be reviewed and practiced. In this way, each provider can theoretically participate in a refresher training activity every three months, although the effectiveness of the training will be challenged by the large number of participants and competing agenda items. The HBB program has faced challenges implementing the refresher training to date and it is not clear if it can be effectively implemented at scale.

Lessons learned: Worksite practice

- *Worksite practice is important and current approaches are not working*: Worksite practice is one component of the HBB scale-up that has not achieved success to date in either Bangladesh or Malawi. Merely encouraging providers to practice resuscitation skills at their worksites has not produced desired results even when the NeoNatalie mannequins have been provided. Some providers practice occasionally but most do not. It is not clear if SBAs will be able to maintain their resuscitation skills without worksite practice on mannequins, especially in countries such as Bangladesh where delivery caseload is low. This issue is particularly problematic for community-based SBAs, many of whom have a very low case load that includes few asphyxiated newborns and who also do not have regular opportunities to practice resuscitation management on the mannequin as they are not supplied with one.
- *Inputs from outside the routine health system may be required to support mentoring*: HBB planners in Bangladesh and Malawi have tried to implement the HBB scale-up through sustainable approaches within the routine health system to the greatest extent possible. Current efforts to strengthen worksite-based learning and mentoring (e.g., the refresher training in Bangladesh) are largely conducted using system resources. It is worth questioning whether this approach will be sufficient and considering other options that require resources from outside of the system. Given the importance of worksite-based practice to the success of HBB, one can make an argument that a short/medium-term strategy to strengthen worksite-based learning—such as an intensive mentoring program—should be experimented with, even if it requires outside resources and support.

- *SBAs not formally trained in HBB do not want to be informally trained on-the-job*: The experience in Malawi suggests that attempts to take shortcuts around the formal HBB educational module are inadvisable. The Malawi HBB program has attempted to expand coverage of the HBB training by having SBAs trained in HBB informally teach their untrained worksite colleagues. SBAs who have not participated in the HBB training show limited interest in participating in this type of training.

PRE-SERVICE EDUCATION

The inclusion of HBB in PSE for all medical and nursing cadres trained as SBAs is a key step towards ensuring the long-term sustainability and effectiveness of HBB. By incorporating HBB into PSE, as the percentage of deliveries attended by SBAs increases over time, the percentage of newborns who are delivered by a provider capable of providing HBB resuscitation services will increase as well.

Including HBB in PSE: The *Guide for Implementation of HBB*, a document developed by the AAP, does not present a defined, set approach for adapting the HBB educational module for inclusion in PSE. HBB has now been included in Bachelor of Medicine/Bachelor of Surgery (MBBS), nursing, midwifery, community skilled birth attendant, and family welfare visitor PSE curricula in Bangladesh and in the PSE curricula in all 13 midwifery colleges in Malawi. In some of these curricula the standard two-day in-service HBB training package/model has been included as is, while in other curricula the package has been slightly modified prior to inclusion. in Malawi, HBB has not yet been included in the curricula for medical cadres other than nurse-midwives, although current efforts continue in that regard.

Clinical practice of HBB: PSE programs have both classroom components as well as clinical components. An effective clinical practice environment should have correct equipment available as well as instructors with adequate knowledge and skills regarding HBB who themselves deliver babies and practice deliveries and resuscitation according to HBB protocols. Medical colleges in Bangladesh and Malawi and the teaching hospitals they are associated with serve as clinical practice sites for nursing and medical students. These teaching hospitals have been included in the HBB initiative and providers there have been trained in HBB. While the framework is in place for effective clinical practice of HBB during PSE, serious efforts will be required to develop and maintain the quality of this practice. Respondents in Malawi reported that the environment in the clinical practice sites is inadequate for learning HBB—the clinical staff there may not be skilled and knowledgeable in HBB, they may not follow HBB procedures, they may not have proper equipment to follow HBB, and there are very few resuscitation cases for students to practice on.

Key partnerships: The HBB programs in Bangladesh and Malawi formed partnerships with the nursing and midwives council in their respective countries. This was felt to be crucial for obtaining official support for the inclusion of HBB in PSE for nurses and midwives. The partnership between the HBB program and BSMMU in Bangladesh facilitated the process of incorporating HBB into PSE both in medical schools as well as post-graduate training programs.

Evaluation of PSE students in HBB: During their clinical practicum, members of all medical and nursing cadres are assessed on a specific set of skills for which they must demonstrate competence. Those skills that are formally assessed are perceived by students as being more important than other skills that are not assessed. HBB is not currently included among the skills that are assessed and scored during clinical practicums in Bangladesh or in Malawi. As a result, nursing and medical students show less interest in learning HBB than they do in learning other skills.

Lessons learned: Pre-service education

- *HBB can be incorporated into PSE curricula*: The HBB programs in both Malawi and Bangladesh have demonstrated that it is possible to work with the medical/nursing teaching community to incorporate HBB into PSE curricula. This is the logical first step in the process of ensuring that HBB is effectively taught in PSE for all cadres.
- *PSE effort can be de-emphasized during scale-up with consequences for quality*: The initial stages of the scale-up of an intervention such as HBB will have many competing priorities and the initial focus will inevitably be placed on introducing the intervention into facilities where the service is currently provided—which will lead to most efforts going towards in-service training and provision of equipment. Although PSE represents the mid- and long-term future of the intervention, it is perhaps inevitable that it will be accorded secondary priority in the tumult of a national scale-up. HBB stakeholders will need to expend energy and resources in the coming years to establish HBB as an effectively taught component of medical and nursing PSE.
- *Effective learning opportunities during clinical practicums have not been ensured*: The effective instruction of HBB within PSE will be crucial to the future success of the intervention. It is an important first step to insert HBB in PSE curricula but this does not ensure that HBB will be taught in an effective manner. The difficulty of creating effective opportunities for students to learn and practice the HBB protocol at clinical teaching sites is a major concern for the HBB program in both countries. The HBB methodology covers more than management of asphyxia—it also applies to normal deliveries—but it is not clear to what extent HBB guides the approach to deliveries at clinical practice sites. It is even less clear how feasible it will be for students to have opportunities to manage asphyxiated newborns during clinical rotations.
- *Students give low prioritization to HBB because they are not evaluated on it*: Students will prioritize the knowledge and skills that they are evaluated on. Students will not fully embrace HBB until it becomes part of the criteria that are used to assess them.

HBB EQUIPMENT AND LOGISTICS SYSTEMS

The provision of HBB equipment is central to the overall HBB initiative. HBB is not exclusively affiliated with any particular brand of resuscitation equipment and can be implemented with equipment from a variety of manufacturers. Laerdal Medical is a member of the HBB Global Development Alliance (GDA) and produces equipment for the practice of resuscitation techniques and the resuscitation of newborns. One of the core principles of the HBB GDA is brand non-exclusivity. Laerdal sells the NeoNatalie mannequin, resuscitation sets (consisting of an ambu bag and two sizes of masks), and the penguin suction on a not-for-profit basis in support of MDG4. The products from Laerdal function well and represent an improvement on the equipment that providers in most countries have access to. Laerdal equipment is used in HBB trainings in both Bangladesh and Malawi and provided to facilities following the training, perhaps creating an impression in providers' minds, to a certain extent, that these particular pieces of equipment are part of practicing HBB.

Resuscitation equipment prior to HBB: SBAs in Bangladesh and Malawi are trained in newborn resuscitation techniques during their PSE and are expected to resuscitate newborns suffering from birth asphyxia. The availability of resuscitation equipment prior to HBB was less than optimal in both countries and the equipment was not high quality. Some health facilities had ambu bags and masks (usually older, large-size ambu bags, with no small masks for pre-term newborns) while most facilities had some equipment for clearing airways, although this equipment was often outdated or makeshift. Prior to HBB, the norm in Bangladesh for many providers was to resuscitate newborns using mouth-to-mouth resuscitation.

Policies regarding provision of resuscitation equipment: Bangladesh and Malawi have developed policies regarding the type and quantity of equipment that should be supplied to each type of facility (see country reports for details). HBB equipment is supposed to be provided to a facility immediately after the first provider from that facility completes the HBB training. Each country has defined two sets of resuscitation equipment that are relevant to the implementation of HBB: (1) *training equipment*, that is to be used for simulated practice and training at worksites (i.e., not on live newborns), which consists of a NeoNatalie mannequin, a penguin sucker, an ambu bag and two masks—size "0" and "1"; and (2) service equipment that is used in the delivery ward or operating theater to resuscitate distressed newborns. Service equipment is the same as training equipment minus the mannequin.

Nurse-Midwife Technician with HBB equipment in Malawi

Supplying resuscitation equipment to facilities: Malawi and Bangladesh have had starkly different experiences supplying HBB equipment. Due to adequate funding for equipment and a well-organized equipment procurement and distribution strategy, the provision of HBB equipment in Bangladesh has proceeded smoothly throughout the scale-up. HBB service equipment in health facilities is stored in a clear Plexiglas box that is mounted on the wall in the delivery ward or operating theater for easy access (see photo).

In contrast, the Malawi HBB initiative has experienced perhaps its greatest implementation challenges with regard to the provision of equipment to facilities where trained providers work. Although the MOH had originally pledged to procure HBB service equipment for all facilities, it was unable to fulfill its commitment due to an unforeseen funding crisis. When it became clear early in the HBB initiative that there was a lack of funding for equipment, the MOH and its partners took the decision to proceed with HBB training even though equipment could not be supplied as planned. While partners have made substantial efforts to fill this funding gap and procure necessary equipment, an equipment gap has resulted in many districts. Most providers who were trained in HBB returned to their facilities following the training with one set of training equipment and no service equipment. These providers were told to make do as best possible in the delivery ward by using any resuscitation equipment previously available at the facility while supplementing it with the HBB training equipment. Some providers who were trained in HBB reportedly did not receive HBB equipment and then maintained that they were unable to resuscitate asphyxiated newborns—a statement that highlights the effect of not providing equipment in a timely manner. Substantial delays in supplying HBB equipment have had a negative impact on the quality of implementation of HBB.

HBB Plexiglas box mounted on a wall in a health facility in Bangladesh

Sourcing equipment and replacing broken equipment: HBB equipment produced by Laerdal Medical cannot be sourced locally in either Bangladesh or Malawi and must be ordered from international distributors. The governments' Central Medical Stores (CMS) in both countries do not stock Laerdal equipment although they do stock older models of resuscitation equipment.

Malawi does not have a system to replace broken or missing resuscitation equipment. District Health Offices can theoretically order resuscitation equipment through the CMS but often do not have funds to do so. The Bangladesh HBB program has a system in place for facilities to replace broken or missing HBB equipment as a recurring cost. Requests from districts go through government channels and from there a request is sent to the BSMMU HBB Team to replace the equipment.

Lessons learned: HBB equipment and logistics systems

- *Equipment must be provided in full to facilities immediately after training*: The HBB program must ensure that HBB equipment is provided to facilities in stipulated amounts immediately following training. Failing to do so results in more negative repercussions than the HBB initiative can afford—the momentum of the training is lost, providers may forget what they have been taught, the intervention loses credibility, and providers are demotivated. Ultimately, failure to provide equipment as specified threatens the effectiveness of the implementation and its sustainability.
- *HBB equipment can be successfully delivered in a complex scale-up*: The HBB program in Bangladesh has shown that in a large country, significant quantities of HBB equipment can be procured and distributed smoothly and without significant problems. The success of this component is a testament to dependable funding, excellent planning, and a strong procurement process.
- *Should training proceed if equipment is not in place?* The problems that the Malawi HBB program faced providing equipment following HBB training in most districts raises an important question: should HBB training have gone forward when HBB managers knew that they could not provide equipment as planned? There is no correct answer to this question, but the inability of the HBB program to provide equipment as intended has had negative repercussions for the HBB initiative since its inception. It may have been better to only train in areas where full sets of equipment could be provided.
- *Innovation in small details can be win-win*: The provision of a Plexiglas box to store resuscitation equipment in delivery wards and operating theaters is an excellent innovation that facilitates access to the equipment while also elevating the profile of HBB.

SUPERVISION OF THE PROVISION OF HBB SERVICES

While HBB training is the necessary first step in strengthening a provider's resuscitation skills, supervision, in the form of teaching, nurturing, and mentoring, is needed over time for a provider to become truly proficient in resuscitation. The purpose of supervision of HBB mirrors the rationale for worksite practice of HBB—to maintain or improve SBAs' skills to resuscitate asphyxiated newborns, while aiming to instill in providers the attitude that they can and should actively seek to identify and manage cases of asphyxia. HBB program managers in Malawi and Bangladesh acknowledge the crucial role that supervision must play if the HBB initiative is to achieve impact. However, they also recognize that MNH supervision systems are not strong and that most SBAs are not being supervised effectively in HBB following the training.

Current practices in supervision of HBB: Until recently, the HBB program in Bangladesh has done relatively little to support or promote the supervision of providers in HBB. Most of the efforts that have been made in supervision have focused on the supervision of HBB training quality. In Malawi, focused efforts have been made to develop forms and checklists to guide supervision of HBB and make plans to supervise HBB through district, zonal, and national-level supervision visits. District-level health officials are supposed to supervise health facilities within the district on a monthly basis but, due to funding constraints, this type of supervision occurs infrequently in most districts. Zonal and national-level supervision activities only reach a

small number of providers and are not intended to support providers' practice of HBB at high coverage. Most supervisory activities in Malawi are integrated, which means that relatively little time is spent on any one task or skill, including HBB.

Introduction of the HBB Refresher Training: HBB program managers in Bangladesh have developed a new approach (the Refresher Training) to the supervision of HBB, which they hope will prove effective and be implemented through routine monthly meetings that are part of the MOHFW system. Under this approach, every month, one-third of the health providers attending the meeting will participate in a 60–90 minute session where key aspects of HBB resuscitation management will be reviewed and practiced. The HBB Refresher Training will be relatively infrequent (each provider will attend once every three months) and will be attended by a large number (30–40) of providers. Given the large number of participants and the short duration, it is not clear how effectively this forum will help SBAs maintain their skills and how enthusiastic providers will be to participate.

Lessons learned: Supervision of the provision of HBB services

Program planners often view supervision as an aspect of programming that should be performed through the routine government system without unsustainable outside inputs. In the case of HBB, it does not appear that supervision through the routine government health services in most countries will provide adequate support to the performance of improved resuscitation management. HBB programmers may need to search for creative solutions outside of the system that are supported by non-recurrent funding in order to establish an effective model for supervision and mentoring of HBB.

MONITORING THE HBB SCALE-UP

Program planners face a choice with regards to monitoring the HBB scale-up. They need information that allows them to understand how HBB is performing. However, the national HMIS usually offers little or no usable information regarding provider performance of resuscitation management. Given that it is usually impossible to quickly insert new indicators into the HMIS, programmers must choose to either (1) introduce a vertical information system—outside of the HMIS—that generates the data that they want, or (2) scale up HBB without the benefit of monitoring data. Each approach has advantages and disadvantages. If the choice is made to develop a parallel information system, the advantages are that data should be available, under the control of the program, and data collection activities should heighten the profile of HBB. The disadvantages are that data quality will almost certainly be low (health workers often resent collecting unofficial data) and often cannot be used reliably to guide project management.

The HBB programs in Malawi and Bangladesh made very different choices with regards to monitoring. Their experiences are described below.

The Malawi experience with monitoring HBB

Approach to monitoring HBB: The HBB Team in Malawi has made extensive efforts to monitor the HBB scale-up, including development of a comprehensive HBB performance monitoring framework; the introduction of a HBB Register in all health facilities that conduct deliveries; and attempts to incorporate an indicator into the HMIS that describes resuscitation of newborns.

Result of the monitoring efforts: The planned approach to monitoring the HBB initiative in Malawi has not been implemented fully and seems to place too heavy a burden on the system. Efforts have been made to develop data collection tools and to collect data but the quality of the data appears to be very low and monitoring reports are not being routinely generated. Use of monitoring data to guide programming appears to be minimal. Some respondents stated that it is unlikely that the

HBB Register will become a permanent part of the government HMIS. One new indicator of newborn survival—the *percentage of newborns asphyxiated at birth that survive*—has been added to the HMIS as a standard indicator following the introduction of HBB.

The Bangladesh experience with monitoring HBB

Approach to monitoring HBB: The HBB Team in Bangladesh took a conscious decision *not* to introduce a vertical HBB information system and instead work to introduce resuscitation indicators in the national HMIS over time. The HBB program eventually decided that some monitoring information was required to guide the program as it moves past the initial scale-up. As a result, the Newborn Care Surveillance System (NCSS) was initiated in October 2013 through funding provided by the USAID-financed MaMoni health system strengthening program. Under this new initiative, district surveillance officers hired by BSMMU support the collection of data by SBAs in selected facilities in eight districts to generate information about both HBB performance as well as other aspects of essential newborn care.

Result of the monitoring efforts: The HBB program and the Directorate General of Family Planning have collaborated to develop a new format for the standard maternity register that includes a place to record use of resuscitation techniques for asphyxiated newborns. This new format is currently being pilot-tested in one district. As of December 2013, the NCSS was just beginning to generate information that hopefully will soon provide the Bangladesh HBB initiative with reliable performance monitoring data.

HBB PROGRAM EVALUATIONS AS A SOURCE OF INFORMATION

The HBB teams in both Bangladesh and Malawi commissioned performance evaluations of their respective HBB programs. Data from these evaluations are summarized elsewhere in this report. Given the paucity of usable monitoring data, the HBB evaluations represent the best opportunity to quantitatively assess the performance of the two HBB programs at this time.

Lessons learned: Monitoring implementation and scale-up of HBB

- *Monitoring is essential, monitoring systems that are too "light" or too "heavy" may not be useful*: Malawi and Bangladesh took very different approaches to addressing a difficult question: what is the best way to monitor HBB during its scale-up? There are limitations to each approach and these have been clearly seen in the two countries. At this point, neither country can offer a good model for how to monitor HBB because neither country has been able to generate useful monitoring data of acceptable quality. Bangladesh's ongoing experiment with the NCSS may prove to be a useful compromise between the two approaches though facilities not participating in NCSS will not be able to self-monitor.

What can be learned from these important experiences? One key lesson is that some monitoring of HBB is required: the scale-up in Bangladesh has been adversely affected by the lack of data. A second key lesson is that a HBB monitoring system that is too heavy can crumble under its own weight and produce little or no useful information.

- *HBB evaluations hold potential to provide intermittent monitoring data*: The HBB evaluations have turned out to be the best—and only—sources of reliable information regarding provider performance during the HBB scale-up efforts in Bangladesh and Malawi. Both of these efforts have been comprehensive, costly, and informative. Their important role in providing information about the scale-up, combined with the difficulties in developing monitoring systems, described above, suggest that it may be useful to explore whether a series of low-cost evaluation efforts conducted over time might be an effective way for a country to monitor the performance of its HBB program.

Phase Three: Institutionalization of HBB

The institutionalization of HBB is the third phase of rolling out HBB. Although it is presented as a discrete, sequential phase, in reality the foundation of the institutionalization of an intervention that is being scaled up is laid during the first phase (preparation for scale up) and continues to be strengthened during the implementation of the scale-up. This final phase of the scale-up model looks towards the future of the intervention once the initial scale-up activities have been completed. The institutionalization phase includes issues such as the assessment of the implementation status of HBB, the integration of HBB into existing systems, and sustainability.

ASSESSING IMPLEMENTATION STATUS OF HBB

There are many aspects of the implementation status of the HBB initiatives in Bangladesh and Malawi that can be assessed, both from this process documentation as well as from the independent HBB evaluations. The text below synthesizes the findings from the two HBB evaluations as well as from this process documentation.

Findings from evaluations of the initial stages of HBB initiatives in Malawi and Bangladesh: The first round of the HBB evaluation in Malawi[26] found that there is no evidence that providers' performance of resuscitation management of newborns was better in districts where HBB had been implemented compared to districts where it had not been implemented one year following the commencement of the rollout. Similarly, the HBB evaluation in Bangladesh[27] did not find evidence that the first two years of the HBB initiative have resulted in noteworthy improvement in providers' performance of resuscitation management for newborns. These results mirror findings from a recent study from Tanzania that found that the conduct of HBB training resulted in improvements in provider performance of simulated newborn care and resuscitation but did not translate into improved clinical practice.[28]

While efforts have been made to incorporate HBB into multiple components of the health system, the Bangladesh HBB initiative to date has been primarily focused on training and provision of equipment—activities that it appears to have implemented to a high standard. The evaluation team postulated that the lack of improvement in asphyxia management may be due to the lack of systemic support of the HBB initiative, given that the evaluation was conducted at an early stage of the HBB rollout and preceded the introduction of supervisory checklists and the Refresher Training. Evaluators noted the limitations of a programmatic strategy, such as the HBB initiative (as implemented to date in Bangladesh), that relies primarily on training.

In comparison to Bangladesh, the HBB scale-up effort in Malawi has perhaps made greater investment in systemic components such as monitoring and supervision. The HBB effort in Malawi has, however, encountered significant barriers in almost every component while implementing HBB.

Some HBB stakeholders have postulated that weaknesses in the methodologies of the evaluations explain the findings and that the programs have in fact achieved impact. However, the evaluation results from the two countries reinforce each other, and when taken together with the findings of this process documentation, it seems most likely that the evaluation results reflect the real situation. It appears that taking HBB to scale introduces systemic factors that, if

[26] *Ibid.* 9.
[27] *Ibid.* 8.
[28] 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.

not effectively addressed, may inhibit achievement of the goals of the intervention—at least during the early stages of the scale-up. In the context of the HBB scale-up efforts in Bangladesh and/or Malawi, overcoming these factors may require actions that include providing post-training support to health workers to make certain that they regularly practice in order to maintain their skills, ensuring that health workers are ready to apply their skills whenever needed, making sure that required equipment is available, generating accurate and useful monitoring data, and training all relevant service providers.

Status of horizontal and vertical aspects of scale-up of HBB in Malawi
One nontraditional model that can be used to assess the status of a scale-up initiative—no matter whether the scale-up itself is vertical or integrated—is to think of a scale-up as having horizontal and vertical characteristics. Horizontal scale-up can be defined as achieving coverage and reaching facilities—key features include in-service training, provision of equipment, and supervision/mentoring. Vertical scale-up involves making progress in incorporating the intervention into less quantifiable components of the health system such as policy, PSE curricula, monitoring systems, and financing. Progress through October 2013 in both aspects of the HBB scale-up in Bangladesh and Malawi is summarized in Table 2.

A review of the information presented in Table 2 suggests that Bangladesh has made strong progress in two of three components of horizontal scale-up during the first two years of the rollout while Malawi has achieved more mixed results. With regards to vertical scale-up, both countries have made excellent progress incorporating HBB into policy. The inclusion of HBB in PSE curricula remains a work in progress, while much work remains to be done in both countries—in the context of limited health systems—to develop structures to effectively monitor HBB and mentor and supervise the SBAs who have been trained in its procedures. Government financing of HBB is a goal for the future.

Overall, the HBB programs in Bangladesh and Malawi have made impressive progress after only two years of a massive scale-up effort—albeit progress that does not appear to have resulted in impact. HBB managers in both countries have identified the weak points of their respective programs and are taking efforts to strengthen them.

Table 2. Status of horizontal and vertical components of the HBB scale-up

Component	Status through October 2013	
	Bangladesh	Malawi
Horizontal		
In-service training	95–100 percent of SBAs trained in 55 of 64 districts through December 31, 2013	30–50 percent of SBAs trained in 26 of 28 districts through December 31, 2013.
Equipment	Both training and service equipment provided immediately after training (IAT) in all facilities	Training equipment provided immediately after training in 21 of 26 districts. Service equipment provided immediately after training in 2 of 26 districts.
Supervision and mentoring	Very little effective supervision and mentoring of HBB during the first two years of the scale-up. Current efforts are underway to strengthen supervision through the Refresher Training program.	Very low coverage of effective supervision and mentoring of HBB at the facility level.
Vertical		
Incorporation of HBB in policy	HBB incorporated into policy and strategies and included in relevant policy documents as they are periodically revised.	HBB incorporated into policy and strategies and included in relevant policy documents as they are periodically revised

Component	Status through October 2013	
	Bangladesh	Malawi
Inclusion of HBB in PSE curricula	HBB has been included in PSE curricula for all relevant cadres. Effectiveness of clinical aspects of HBB PSE (use of practice equipment, evaluation of students, etc) is unclear.	HBB has been included in PSE curricula for nurse-midwives but not for other cadres. Effectiveness of clinical aspects of HBB PSE (use of practice equipment, evaluation of students, etc) is unclear.
Monitoring HBB	No quantitative monitoring of provider performance of resuscitation. Inclusion of resuscitation indicators in the HMIS is being pilot tested. Newborn Care Surveillance System introduced in October 2013.	New indicator of survival of asphyxiated newborns introduced into HMIS. Parallel information system for HBB designed and introduced; quality and use of data are low.
Government financing	MoH has not provided dedicated funding for recurrent HBB expenses.	MoH has not provided dedicated funding for recurrent HBB expenses.

Lessons learned: Assessing implementation status of HBB

HBB evaluations: Taken together, evaluation results from Bangladesh and Malawi suggest that despite the best efforts of HBB stakeholders, the implementation models of the HBB initiative as executed during the early stages of the scale-ups have not resulted in noteworthy improvements in providers' management of newborn resuscitation. As the official HBB literature notes, HBB is essentially a training program. Although the scale-up efforts in Bangladesh and Malawi have attempted to strengthen other components of the health system to support HBB, the lack of impact to date may well be due to the limitations of a programmatic strategy such as the HBB initiative that relies primarily on training and provision of equipment with only weak support for other components from the government health system.

HBB stakeholders in both countries are aware that additional strategies and program activities are required to support the initiatives and are working to strengthen the design and implementation of the initiative. Some HBB in-country stakeholders feel that the evaluation results can be explained by the fact that a new intervention such as HBB must mature and be institutionalized before it can achieve impact and expect that the intervention will begin to show positive results in the near future. While this may be true, it is not likely that such maturing will happen on its own. Indeed, it could equally be argued that any progress achieved to date could attenuate over time, as the initial enthusiasm from the introduction of HBB wanes. One of the driving assumptions behind HBB is that providers en masse will seize the knowledge and skills that they gain from the HBB training and apply them during deliveries. The program may need to reexamine this assumption and consider what must be done to instill in birth attendants the drive to apply their new knowledge and skills. Issues for programmers to reflect on include:

- How to encourage providers to believe that their efforts in resuscitation matter
- How to help them achieve the required competence to provide high-quality resuscitation
- How to instill in them the confidence that they can do what is necessary to achieve desired outcomes in most cases.

Many of these inputs will need to come from within the workplace, as they are not factors that can be effectively influenced solely from external sources.

"We have trained our midwives that mothers and newborns deserve equal attention and that a newborn is a unique individual. In our culture, until a baby cries, many do not consider it to be a human being. More attention is given to the mother than to the newborn. A maternal death is a big deal while the death of a stillborn baby—a baby who possibly could have been saved if better care had been provided—is not as important."

Senior nurse, Malawi

TRIANGULATION OF HBB EVALUATIONS AND PROCESS DOCUMENTATIONS

The simultaneous conduct of PD of HBB scale-up efforts in Bangladesh and Malawi where evaluations of HBB also have been conducted recently presents a unique opportunity to triangulate the findings of the evaluations and PDs and to consider the extent to which they reinforce each other. The central finding from the HBB evaluations of no significant change in resuscitation management during the early stages of the scale-up is supported by this PD that describes two rollout efforts that have faced significant challenges (especially in Malawi) and that have design limitations. Taken together, findings from the evaluations and the PDs suggest that the quality and coverage of various components of the scale-up will need to be strengthened considerably if HBB is to achieve substantial impact on newborn mortality in Bangladesh and Malawi.

The importance of evaluation (in light of the limitations of routine monitoring)
The HBB evaluations conducted in Bangladesh and Malawi have been critical to understanding the effect of scale-up efforts on various aspects of the intervention, most importantly provider performance. While the evaluations results must be interpreted with caution, they represent the most dependable information that is available, given the lack of reliable monitoring data in both countries. Given concerns with the quality of routine government monitoring data worldwide, one could make a strong case that ongoing, periodic independent evaluation is a necessary component of any HBB rollout effort.

Yamey's research has linked successful scale-up with the incorporation of research activities into implementation of the rollout. Observations on this relationship in the context of the HBB scale-ups in Bangladesh and Malawi are presented in Box 5.

Box 5. Attributes of a successful scale-up: Incorporating research into implementation

Researchers have noted the advantages to conducting applied investigations during scale-up initiatives in order to guide the rollout process. This requires program managers to be open to research findings that identify strengths and weaknesses of the scale-up and be able and willing to redesign the intervention based on study findings. The conduct of the HBB evaluations in Bangladesh and Malawi certainly qualify as research during scale-up and this process documentation has generated actionable findings as well. The MoH in Malawi and MOHFW in Bangladesh and their implementation partners will need to review findings from the HBB process documentation and evaluations and make some hard decisions regarding how to address the challenges that have been identified.

INTEGRATION AND SUSTAINABILITY OF HBB

Integration and sustainability are related concepts. The integration of a new intervention such as HBB into different components of the health system is felt to contribute to its long-term sustainability. The PD Team's findings regarding the integration and sustainability of HBB in Bangladesh and Malawi are presented below.

Integration of HBB

The AAP developed HBB as a focused intervention to improve management of birth asphyxia in order to reduce high rates of newborn mortality. HBB is a vertical intervention by design although the HBB approach does encompass other aspects of immediate essential newborn care. Countries that adopt HBB are expected to integrate HBB into the broader continuum of essential newborn care/MNH systems and services as appropriate based on in-country considerations.

While Malawi and Bangladesh have introduced HBB as a vertical intervention in order to accelerate its adoption and attempt to lower newborn mortality rapidly, they have sought to integrate HBB into existing MNH systems from the initial stages of the scale-up. Information in Table 3 summarizes the current status of the integration of HBB into key components of the health systems in Malawi and Bangladesh as well as future plans for further integration. Additional details can be found in the country reports.

In Malawi and Bangladesh, there has been progress integrating HBB into policy, pre-service education and in-service training, procurement of equipment, routine services, supervision and monitoring, and funding mechanisms. The most substantial progress appears to have been made in the integration of HBB into policy and routine services. It should be noted that for some components, such as supervision, that are not very effective, integration of HBB may solidify its position as a standard practice while not contributing substantially to its objective of improving resuscitation of asphyxiated newborns.

Table 3. Status of integration of components of HBB in Bangladesh and Malawi

Component and current status of integration	Current status		Future plans for strengthened integration
	B	M	
HBB adopted as official **government policy** and included in relevant policy and strategic documents.	✔	✔	Incorporate HBB into additional policy and strategy documents as they are periodically revised.
HBB included in **pre-service education (PSE) curricula** for nurses and midwives.	✔	✔	Strengthen quality of HBB instruction in other aspects of PSE.
HBB included in **PSE curricula** for physicians and community-level providers.	✔	—	Malawi to include HBB in PSE for physicians. Both countries to strengthen quality of HBB instruction in PSE.
HBB integrated into key essential newborn care/MNH **in-service training** courses.	—	✔	Bangladesh to incorporate HBB into key training courses.
Previous models of **resuscitation equipment** available through government medical stores.	✔	✔	Unclear if newer models (Laerdal or other brands) will become available through government medical stores.
SBAs trained in HBB are primary providers of delivery services, thus HBB is **integrated into routine services**.	✔	✔	HBB to be included in PSE for medical students in Malawi.
HBB is part of the integrated **supervision systems** at national, zonal, and district levels and integrated into MNH supervision checklists.	--	✔	Bangladesh experimenting with HBB Refresher Training to strengthen supervision of HBB through MOHFW system.
Data currently being collected through ***permanent*** **HMIS** that describe: • Newborns born asphyxiated • Resuscitation of newborns	 -- --	 ✔ --	In Bangladesh, MOHFW conducting field test of revised Maternity Register that collects data on resuscitation with goal to make permanent.

Component and current status of integration	Current status		Future plans for strengthened integration
	B	M	
Data on resuscitation being collected through ***vertical*** **HBB HMIS**.	✔	✔	Unclear if Malawi HBB-HMIS will become permanent. Bangladesh NCSS is short-term surveillance program.
Indicator of survival of asphyxiated newborn included in permanent HMIS with HBB Team support.	--	✔ [29]	Efforts continuing in both countries to include indicators of resuscitation of asphyxiated newborns.
Routine funding for HBB integrated into MOH financial systems.	--	--	HBB included in MOHFW Operational Plan in Bangladesh, indicating intention to integrate HBB into financial system.
Note: B = Bangladesh; M = Malawi			

Sustainability of HBB

Sustainability is a concept that has multiple facets. No aspect is as important as the sustainability of positive change in outcomes. In the case of HBB, this translates to sustaining improved resuscitation of newborns who do not breathe at birth. As noted above, there is no evidence at this time that management of asphyxiated newborns has improved in Bangladesh and Malawi during the initial year following the scale-up of HBB. This observation leads in turn to a difficult question: what is there at present to sustain?

Other aspects of the sustainability of HBB are intertwined with and supported by its integration into the MNH service framework and other components of the overall health system. Increased integration of an intervention such as HBB moves it closer to becoming an accepted, sustainable approach to providing a service. As such, the status of HBB with respect to the system elements that were discussed in the preceding section on integration—policy, medical education and training, monitoring and supervision, routine services, and procurement and logistic systems—contributes to (or detracts from) the long-term sustainability of HBB. Understandably, strengthening the sustainability of HBB in Bangladesh and Malawi is a work in progress.

Sustainability of government funding: For HBB to be truly sustainable it will need to be included in all skilled attendant and midwives training courses and the public health community will need to consider it to be an indispensable part of the essential newborn care package. Long-term sustainability of HBB will also require dedicated recurrent funding through the MOH/MOHFW budgets. Given the nature of the HBB intervention, funding will thus be required for periodic in-service training, provision of new and replacement equipment, and for mentoring and supervision. At this time, donors fund HBB training and most of the costs associated with procurement of HBB equipment, and while partners and government both support supervision, this activity is not being performed effectively at present. It is unclear when the MOH/MOHFW will be able to provide adequate funding to ensure the financial sustainability of HBB.

Lessons learned: Integration and sustainability of HBB

Yamey has noted that even when scaling up an intervention through a vertical approach—as is the case with HBB—the simultaneous integration of the intervention into the existing health system increases the probability that the scale-up will be successful. This association, in the context of a lesson learned from the HBB rollouts in Bangladesh and Malawi, is discussed in Box 6.

[29] Note: indicator does not measure resuscitation, but rather *percentage of newborns asphyxiated at birth that survive*.

Box 6. Attributes of a successful scale-up: Adopting an integrated approach to scale-up

The HBB Teams in Bangladesh and Malawi have introduced HBB vertically while preparing an integrated foundation within their respective health systems to strengthen the mid- and long-term effectiveness of the HBB intervention. Integrating a lifesaving intervention into a health system that has limited functionality raises a question for programmers: is it preferable to integrate all aspects of the intervention in order to enhance sustainability, or is it preferable at times to implement the intervention vertically while simultaneously supporting the strengthening of the health system? Pursuing a concept such as integration as an end unto itself can work against the effectiveness of the intervention. For an important intervention such as HBB that holds potential for near-term impact, a combination of vertical and integrated approaches appears to be an appropriate compromise as the HBB program attempts to achieve a near-term impact on newborn mortality at a minimum cost while ensuring the future viability of HBB.

- *Without impact, what is there to sustain*? Any discussion of sustainability first needs to clarify one point: what are we trying to sustain? The issues that are most commonly debated regarding sustainability are systemic components of an intervention such as personnel, supervision, information systems, or funding. But given findings from the HBB evaluations in Malawi and Bangladesh that show no improvement in asphyxia management, one might ask what there is to sustain at this point of the scale-up? Sustaining systemic elements of the intervention makes little sense if impact is not being achieved.

We have yet to see evidence that improvement in asphyxia management can be achieved—much less sustained—when HBB is taken to scale. What HBB programmers may need to consider is whether making additional inputs from outside the routine government health system into selected components of HBB—for example, mentoring, supervision, or information management—may be required in the short or medium term in order to achieve impact. It may be more beneficial to do what it takes to make HBB the "new norm," and have a discussion about sustainability of HBB at scale once impact has been demonstrated.

- *Dedicated government funding of HBB is an important aspect of sustainability*: Another issue with regards to long-term sustainability of HBB in Bangladesh and Malawi is MOHFW/MOH funding. It is unclear whether (and when) the ministries will be able to provide dedicated funding to support key activities that underpin HBB, such as equipment procurement, mentoring and in-service training. The provision of MOHFW funding dedicated to HBB would be an important component of long-term sustainability.

Recommendations

This report has described two commendably implemented efforts to improve the management of resuscitation of asphyxiated newborns through the scale-up of the HBB approach in Bangladesh and Malawi. The most intensive inputs have been in the design and implementation of national training efforts and the provision of high-quality equipment to facilitate providers' performance of resuscitation. Additional inputs have been made in intervention components that include supervision, monitoring, and curriculum development. This report has been structured according to the three phases of the scale-up model: *preparing for the scale-up*, *implementation of the scale-up*, and *institutionalization of HBB*. Lessons learned specific to the components of each phase have been presented above.

Despite the best efforts of HBB stakeholders, it appears that the HBB initiatives in Bangladesh and Malawi have not improved the management of resuscitation to date and thus have not saved newborn lives during the early stages of the scale-ups. The driving assumption of these two initiatives during their rollout phases—that a strong training component and provision of equipment, supported by the MOH management system, will result in strengthened resuscitation management—has not been proven true. HBB program managers in both countries are aware that the quality and coverage of various components of the scale-up will need to be strengthened for the initiative to achieve impact and they are working accordingly to strengthen the design and implementation of the intervention.

HBB is clearly an intervention that will require continued nurturing well past the initial scale-up if it is to achieve substantial impact on newborn mortality. While the process documentation (PD) described in this report is not intended to be an evaluation, the findings of the PD are important and provide a strong basis for developing and presenting general recommendations to guide HBB scale-up efforts in any country that is considering experimenting with HBB. The recommendations below reflect the views of the Consultant and various HBB stakeholders regarding issues that HBB scale-up initiatives in Bangladesh, Malawi, and elsewhere should consider as they make efforts to help more babies breathe.

OVERARCHING RECOMMENDATION

Investments in health system components that support HBB must be given priority equal to training and provision of equipment. HBB is described as a training program and scale-up efforts are prioritizing in-service training and equipment provision. Additional components such as partnership and financing structures, monitoring, and supervision and mentoring, demand equal priority. HBB may not succeed at scale until it develops a broader scope.

Policy development leading to adoption of HBB

Bangladesh and Malawi have both demonstrated excellence in many facets of developing policy to adopt HBB. Key recommendations in this area include the following:

- *The Ministry of Health and other local organizations should lead the scale-up*. Identify local champions of HBB who can bring all stakeholder groups to consensus. External partners should catalyze and support the policy development process.
- *Engage local implementers and other stakeholders*. All relevant local stakeholder groups should be engaged and invited to participate in the policy development process. Representatives of professional societies and regulatory institutions should be key participants. Conduct high-profile events to create awareness regarding the need for HBB and develop commitment among stakeholders.

- *Foster country ownership*. The host country must be committed to HBB and own the initiative. Partners and donors should play a supporting role and not control the agenda.
- *Create consensus on intervention effectiveness*. Convince stakeholders that HBB holds the potential to achieve impact through seminars, local research studies, advocacy by champions, and inputs from renowned technical experts.
- *Adopt a phased approach to scale up including an initial pilot study*. Managers of the scale-up should anticipate barriers to achieving impact and make plans to identify them and minimize their effect. This can best be done through the conduct of an initial pilot at the operational level followed by a phased approach to scale-up that allows for intermediate corrections to program design and implementation strategies.

Development of the HBB scale-up plan

- *Document commitments made by key players*. Commitments made by government and partners and the roles they will play to support the scale-up should be documented in the scale-up plan (SUP). Ensure that the SUP does not gloss over weaknesses in the health system and that all commitments can be met.
- *Address system components in addition to training and equipment in the SUP*. Ensure that the SUP focuses adequate attention and resources on components such as supervision, mentoring, and monitoring.
- *Define the goal and demonstrate how it will be achieved*: The SUP should describe a target "state of implementation" at the district and facility level and a plan to achieve it. This description should be based on the goals of *resuscitating the majority of non-breathing newborns* and *having a service provider with HBB skills, adequate resuscitation equipment, and the motivation to use them, present at every birth*. The SUP should then outline the scale-up activities that will be implemented in order to achieve this goal.

Funding, Inputs and Partnerships

- *Form partnerships through an inclusive approach*. As a HBB leader in Malawi said, "We involved *everybody*." Invite all potential partners to join the initiative and contribute. Taking HBB to scale without the support of a strong partnership framework is beyond the ability of almost any government.
- *Develop a funding base founded on large, secure grants from a limited number of partners (if possible)*. The ideal funding model for a HBB scale-up would be similar to that of Bangladesh, where a small group of partners provided dedicated funding for the entire scale-up effort, with a single dominant grant funding all training and most equipment procurement nationwide and where funding was fully secured prior to commencing the scale-up. This approach, when centrally coordinated by a strong governmental institution, facilitates both planning as well as subsequent adherence to the plan.

Many countries will not obtain financing for a full national scale-up. These countries should consider a phased scale-up based on available funding. The problem with multi-partnered stage-wise scale-up models is that they are often not effectively coordinated and partners may not establish or follow implementation norms. Countries that pursue such a scale-up approach should develop norms and procedures for ensuring adherence.

- *Ensure that funding commitments can be met*. Implementation can collapse or there can be a decrease in quality when funding commitments are not fulfilled.
- *Develop implementation roles for both government and nongovernment actors in the HBB scale-up*. Government and nongovernment agencies both have strengths and weaknesses with regards to implementation and can complement each others' efforts when they work together. It is hard to imagine either group implementing HBB alone.

ADAPTATION OF HBB FOR THE LOCAL CONTEXT

AAP should continue to allow host country teams to adapt or make additions to HBB materials and approaches, as appropriate. AAP's willingness to support adaptation of HBB for the local context is an important attribute of successful scale-up models and a sign of the strength of the collaborative partnership between AAP and host countries.

IN-SERVICE TRAINING

- *Formally training all SBAs in HBB is highly recommended*. In most or all situations, it would be preferable to train all SBAs in one region of a country than to train some SBAs in all regions. Untrained providers may not participate enthusiastically in informal worksite training, decreasing the effectiveness of the rollout.
- *Proceed with training only if full sets of equipment can be provided*. Before in-service training starts, complete sets of both service and training HBB equipment *must* be provided to facilities where the trainees work.
- *Make considerable efforts to engage the community of providers—they are key to the success of the HBB initiative*. The potential for HBB to save newborn lives lies in the hands of the providers who perform deliveries. Providers must, of course, be competent to perform resuscitation, but they must also believe that their efforts make a difference, and that they can do what is necessary to save lives. Do nothing that signals to providers that their role is not crucial or that half-measures are acceptable.

- *Develop a comprehensive model for launching HBB at the district level*. Recruit district HBB trainers from key facilities in the district and train them immediately prior to the launch. Conduct a district-level orientation/planning meeting directly prior to the initiation of the HBB training that is attended by district health officials and senior health providers to promote district engagement, ownership, and conduct planning for the rollout.

WORKSITE TRAINING

With regard to presenting recommendations, worksite training is considered to include practice among health facility staff as well as activities mentored by a senior colleague who may work at a separate facility.

- *Develop persuasive, monitored strategies for ensuring that providers practice HBB at their worksites*. Worksite practice is one component of the HBB scale-up that has not been successful to date in Bangladesh or in Malawi. Merely encouraging providers to practice resuscitation skills at their worksites has not produced desired results, even when the NeoNatalie mannequins have been provided. Serious attention should be given to determining how regular practice on the NeoNatalie mannequin (preferably in pairs, as is done during the HBB training) can be institutionalized.
- *Experiment and think creatively to develop an effective mentoring approach*. Develop and test several approaches for mentoring in order to learn more about what works best in the local context. Mentoring cannot be left to the routine government supervisory system if HBB is to succeed. The program should consider approaches that are sustainable as well as those that require short- or medium-term unsustainable resources from outside the system and that may be vertical in nature. Partners should be ready to invest significant resources in this component.

PRE-SERVICE EDUCATION

- *Move quickly to incorporate HBB into PSE curricula for all cadres that serve as SBAs*. The HBB programs in both Malawi and Bangladesh have demonstrated that it is possible to work with the medical/nursing teaching community to incorporate HBB into PSE curricula. This is the logical first step in the process of ensuring that HBB is taught effectively in PSE for all cadres.
- Move beyond the incorporation of HBB in curricula to strengthen other aspects of HBB education in PSE early in the scale-up. Areas that should be addressed include:
  - Ensuring the quality of classroom teaching
  - Preparing clinical practice sites that are effective learning environments for HBB
  - Including HBB in classroom and clinical assessment criteria
  - Transitioning graduates to facilities where HBB is the accepted and routine methodology followed when delivering babies
- Periodically conduct formal assessments of the quality and effectiveness of HBB in PSE. Based on the assessment findings, take action to strengthen the HBB PSE component. A recent assessment of the HBB component of PSE for nurses in Malawi, conducted by Stanley, 30 provides an example of how such an assessment could be framed.

[30] Stanley J. Integrating Helping Babies Breathe into pre-service nursing programs in Malawi: A Program Review. MCHIP 2013.

HBB EQUIPMENT AND LOGISTICS

- Ensure funding and logistics so that equipment can be provided in stipulated amounts to facilities immediately after training. Failure to provide equipment as specified threatens the effectiveness of the implementation and its sustainability.
- Ensure that essential resuscitation equipment is readily available both through the government CMS (for government facilities) as well as in the market (for private and nongovernmental facilities). The Laerdal NeoNatalie mannequin has an average life of three years and other resuscitation equipment will need to be replaced periodically. The MOH should move quickly to agree on a list of basic resuscitation equipment of adequate quality to include on the essential commodity list. CMS and private suppliers of medical equipment can stock Laerdal medical brand equipment or an appropriate alternative.
- Develop a system for facilities to replace broken or missing HBB equipment. The MOH must ensure the ongoing availability of resuscitation equipment to support the sustainability of the HBB initiative.

SUPERVISION OF HBB

Supervision is a neglected component of most public health interventions. Most supervision in low-resource settings is performed by government personnel in a cursory fashion and the supervision has little to no effect on program performance. Most programs or interventions invest few resources in supervision; when they do fund supervision, it is usually performed by project staff, often working with a government counterpart.

Supervision has an important role to play in strengthening the effectiveness of HBB but it is not clear what that role is in the context of low-resource settings nor how it can be realized. It is clear that routine supervision, as conducted by government public health supervisors in most developing countries, will contribute little to strengthening HBB during its rollout. It is thus impossible to formulate standard guidance regarding supervision of HBB that will be applicable to most or all countries that attempt to roll out HBB.

There is some overlap between the functions and objectives of supervision, worksite training, and mentoring as they relate to HBB during a scale-up. HBB managers should determine how these activities can be best implemented, how they reinforce each other, and strategize accordingly. This is an area where countries need to think creatively and develop innovative approaches to supervision, mentoring, and worksite practice that provide effective support to providers' performance of improved resuscitation management. HBB programmers may need to test solutions that are supported by non-recurrent funding in order to establish an effective model for supervision and mentoring of HBB.

MONITORING HBB

HBB programs should put in place a system for generating reliable, usable monitoring data, and then analyze, report, and use the data for program management. HBB managers should consider what kind of outcomes can be accurately measured through monitoring and what kind of information is actionable by program managers. Monitoring systems that are too "light" or too "heavy" may not be useful. Options to consider include one or more of the following:

- Institute a "heavy" vertical HBB-HMIS system, similar to what Malawi has developed. This approach has not been successful in Malawi and cannot be recommended unless the host country has a very strong supervisory system and a history of success with vertical monitoring initiatives.

- Collect HBB data through a surveillance approach from selected facilities, similar to the approach currently being introduced in Bangladesh. This approach does not allow facilities that are not participating in the surveillance system to monitor their own performance.
- Incorporate one or two key indicators that describe resuscitation of asphyxiated newborns into the permanent HMIS and measure them through established national data collection mechanisms.
- Conduct periodic mini-surveys of various aspects of HBB performance, similar to what might be done in a low-intensity evaluation approach.
- Develop an approach that provides support to health administrators and providers that are interested in collecting, analyzing, and using data from their own facilities on a voluntary basis to improve their own management of asphyxiated newborns.

Carefully consider which indicators generate data that reliably measures program performance before adding them to the national HMIS or otherwise measuring them. Indicators such as the percentage of newborns asphyxiated at birth that survive following resuscitation can be difficult to interpret, since in many instances newborns who are severely depressed yet alive at birth may well be classified as stillborns with no effort made to resuscitate them. Some experts advocate monitoring stillbirths, disaggregated by fresh/macerated, as well as very early newborn deaths (i.e., within the first 12 or 24 hours following delivery) as a more meaningful way to assess the impact of a program such as HBB. These indicators can be tracked over time (at least on a quarterly basis) at the facility level and higher and benchmarked against other facilities of the same type.

ASSESSING IMPLEMENTATION STATUS OF HBB

Managers of any HBB scale-up initiative should plan for periodic independent evaluations. Evaluations are an invaluable source of objective information that can be used to assess various aspects of program processes, outputs, and outcomes. Evaluation results are often the only reliable data available to describe program performance given the lack of reliable monitoring data in many health systems. The best evaluation designs will generate useful, actionable data on a periodic basis that can inform various stages of the scale-up effort.

INTEGRATION AND SUSTAINABILITY OF HBB

- *Introduce HBB vertically while simultaneously integrating the intervention into components of the existing health system*. For an important intervention like HBB that holds potential for near-term impact, a combination of vertical and integrated approaches appears to be an appropriate compromise as the HBB program attempts to achieve a near-term impact on newborn mortality at a minimum cost while ensuring the future viability of HBB.
- *Don't emphasize sustainability of processes over sustainability of impact*. There is no point to implementing an intervention through sustainable approaches if impact is not being achieved. Program managers must balance the sustainability of implementation processes with the achievement of impact and not shy away from innovative approaches that may require short-term additional inputs from outside the routine government health system into selected components of HBB—and that may also start movement towards long-term, sustainable impact.
- Work with the MOH to have the government plan to dedicate recurrent funding to the HBB initiative in the near future. The eventual provision of MOH funding dedicated to HBB is an important component of long-term sustainability.