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

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Abbreviations and Acronyms

AAP	American Academy of Pediatrics
ANC	Antenatal Care
CHAM	Christian Health Association of Malawi
CMS	Central Medical Store
CPD	Continuous Professional Development
DHMT	District Health Management Team
DHO	District Health Office
EmONC	Emergency Obstetric and Neonatal Care
GDA	Global Development Alliance
HBB	Helping Babies Breathe
HBBR	HBB Register
HBBRF	HBB Reporting Form
HMIS	Health Management Information System
HSSP	Health Sector Strategic Plan
IMNCT	Integrated Maternal and Newborn Care In-service Training
IST	In-service Training
LDSC	Latter Day Saints Charities
MCH	Maternal and Child Health
MCHIP	Maternal and Child Health Integrated Program
MDG	Millennium Development Goal
M&E	Monitoring and Evaluation
MoH	Ministry of Health
MNH	Maternal and Newborn Health
MR	Maternity Register
MTOT	Master Training of Trainers
NGO	Nongovernmental Organization
NMT	Nurse-Midwife Technician
PD	Process Documentation
PSE	Pre-service Education
RHU	Reproductive Health Unit
SBA	Skilled Birth Attendant
SNL	Saving Newborn Lives
SRH-TWG	Sexual and Reproductive Health Technical Working Group
SSDI	Support for Service Delivering Integration project
SUP	Scale-Up Plan
ToT	Training of Trainers
USAID	United States Agency for International Development
UNICEF	United Nations Children's Fund

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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.

Executive Summary

Great strides have been made in decreasing child mortality over the past two decades. Efforts to further reduce child mortality have led the international public health community to focus on newborn mortality and its causes. Almost one-quarter of newborn deaths occur due to birth asphyxia. Helping Babies Breathe (HBB) is an intervention that provides guidance to health providers regarding how to care for a newborn during the first minute of life and how to assist babies who are experiencing difficulty breathing. Researchers have demonstrated that HBB can reduce newborn mortality due to asphyxia in controlled field trials. Over 60 countries have introduced HBB at some level but relatively few have attempted a national rollout. Interventions such as HBB must be implemented at scale in order to achieve population-level impact, but this introduces a set of system-related challenges that often are not faced during small-scale trials. Improved understanding of the science of scale-up is crucial to achieving impact at the population-level. This report aims to increase understanding of how HBB can best be scaled up by documenting the processes that the Malawian government and its partners followed during the national rollout of HBB between 2011 and 2013.

HBB holds notable potential to achieve significant reductions in newborn mortality in Malawi, given the high level of facility deliveries, almost all of which take place in public sector facilities and are attended by skilled birth attendants. The Malawian government led the effort to launch the HBB initiative with support from the Maternal and Child Health Integrated Program (MCHIP) led by Jhpiego and the initiative has received substantial ongoing support from Save the Children and other partner organizations throughout its implementation. The Ministry of Health (MoH) worked with its partners to adopt HBB as official policy through a consensus-based approach that resulted in all stakeholders accepting HBB. The MoH then developed a national HBB scale-up plan that defined program objectives, addressed operational issues and documented the roles of partner organizations. The HBB scale-up in Malawi has not had a single major funding source; rather, it has been funded through a somewhat fragmented approach with a variety of partners supporting different districts or components of the intervention.

HBB stakeholders in Malawi faced challenges during the implementation of the scale-up. While the formal HBB training has been conducted with considerable success, funding constraints led to a decision to train a subset of providers in HBB in each district/facility and then have those providers informally instruct their untrained coworkers in HBB at their worksites—an approach that has not produced envisioned results. Full sets of resuscitation equipment have not been provided as planned in most facilities. The majority of providers do not appear to regularly practice resuscitation techniques at their worksites using the NeoNatalie mannequin, a key activity in the HBB implementation framework designed to maintain providers' skills in asphyxia management. Most providers do not receive effective worksite supervision or mentoring in their practice of HBB. The HBB monitoring plan is comprehensive but has not been implemented fully; the quality of monitoring data is poor and data are not used effectively to guide programming. Nursing colleges have incorporated HBB into their curricula and efforts are ongoing to ensure that students receive effective instruction in the HBB approach to management of delivery and resuscitation. A recent evaluation of the first year of the HBB scale-up in Malawi found no evidence that providers' performance of resuscitation management for newborns was higher in districts where HBB had been implemented compared to control districts following the initiation of the scale-up.

The first phase of the scale-up of HBB in Malawi will be completed in 2014 when HBB is introduced in the two remaining districts. This report documents lessons learned during the first phase of the scale-up and presents consensus-based recommendations to guide the

implementation of HBB in Malawi during the coming years. These recommendations include the following:

1. Begin planning aggressively for the second phase of the HBB scale-up
2. Develop a funded plan to train all facility-based skilled birth attendants by a specified date
3. Secure funding to fully equip all delivery facilities in Malawi with complete sets of training and HBB implementation equipment
4. Develop and field-test new approaches to supervision, worksite training, and mentoring
5. Develop a strategy for collecting limited monitoring data of acceptable accuracy and report results on a regular basis

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 neonatal resuscitation, may prevent up to 30 percent of intrapartum-related newborn mortality.[4]

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 under controlled conditions, attempts to scale up these interventions 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 prevent 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). 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. More than 60 countries have introduced HBB, including 18 countries that have national HBB plans coordinated by the government. The 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 Malawi, USAID encouraged MCHIP to provide in-country support to the scale-up along with a technical representative from AAP. USAID also rallied backing for the Malawi scale-up among other HBB GDA members.

Malawi's adoption of HBB: In line with the global trend, gains in reducing newborn mortality in Malawi have not matched achievements in efforts to lower infant and child mortality. A recent national assessment in Malawi documented the low quality of resuscitation care for asphyxiated newborns.[5] Moving quickly to respond to the results of the assessment, Malawi began to prepare for the national scale-up of HBB in 2010.

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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] *Malawi 2010 EmONC Needs Assessment: Final Report*. Ministry of Health, Republic of Malawi. 2010.

"Bless you for bringing HBB to our district. You have helped to save many Malawian babies"

Nurse-Midwife Technician, Malawi

Purpose of the report: This report is a critical documentation of the processes that have been followed in Malawi while taking HBB to scale. It seeks to examine different elements of the scale-up and distill the findings into a set of conclusions and recommendations. This report is complemented by a separate process documentation of the scale-up of HBB in Bangladesh. A third report synthesizes and contrasts the HBB scale-up efforts in Malawi and Bangladesh in order to develop broader conclusions to share with countries that are considering introducing or rolling out HBB.

Structure of the report: The 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.[6] Following a description of the background to the HBB scale-up and the methodology of the process documentation, the first part of the report describes the **preparation for the scale-up**, including policy development, building partnerships and securing funding, planning for the scale-up, and adapting HBB for the local context. The second part of the report focuses on the **implementation of the scale-up** and thus describes how the scale-up planning document was used during implementation, HBB training, equipment and logistics systems, supervision and monitoring, and referral systems. The third part of the report documents progress towards the **institutionalization of HBB** and explores issues such as integration of HBB, sustainability, and the assessment of the implementation status of HBB. The report closes with overarching observations, lessons learned, and recommendations. Overarching observations and lessons learned, framed on a model of determinants of successful scale-up efforts as proposed by Yamey, can be found in Annex 1.

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

Background

The Republic of Malawi is a landlocked country in southeast Africa with a population of approximately 15 million people. Malawi's Human Development Index ranks 170th out of 187 countries listed,[7] while its gross domestic product per capita ranks 181st out of 187 countries listed.[8] Malawi is divided administratively into three regions (Northern, Central, and Southern regions), which are in turn divided into 28 districts.

Almost all health facilities in Malawi are administered either by the government or by the Christian Health Association of Malawi (CHAM). The private sector provides less than one percent of health services. Malawi has four central hospitals located in major urban centers that offer specialized care. Districts that do not have a central hospital have a district hospital. Community hospitals and health centers provide primary-level services in all districts. CHAM facilities receive substantial support from the government and are mostly community hospitals or health centers. Almost all health facilities in Malawi provide delivery services.

Maternal health care in Malawi: The utilization of maternal and child health (MCH) services in Malawi is relatively high, as illustrated in Table 1.[9]

Table 1. Utilization of maternal health services in Malawi

Indicator	
% of pregnant women who receive antenatal care from a skilled birth attendant at least once during pregnancy	95%
% of births take place in a health facility	73%
% of births in public (government) facilities	57%
% of births in CHAM facility	16%
% of facility-based deliveries take place in hospitals	44%
% of facility-based deliveries take place in health centers	56%
% of births are assisted by a SBA	71%
2010 (adjusted) maternal mortality ratio	460 per 100,000 live births
Source: National Statistical Office (NSO) and ICF Macro. 2011. *Malawi Demographic and Health Survey 2010*. Zomba, Malawi, and Calverton, Maryland, USA: NSO and ICF Macro. UNICEF Malawi Statistics: http://www.unicef.org/infobycountry/malawi_statistics.html	

Newborn mortality in Malawi and its causes: Malawi is one of few countries on track to achieve MDG4. Recent estimates from 2011 of under-five, infant, and newborn mortality are 83, 53, and 27 deaths per 1000 live births, respectively.[10] The major causes of newborn mortality in Malawi include intrapartum-related (birth asphyxia), severe infection, and complications of pre-term birth. Asphyxia accounts for 28 percent of newborn deaths.[11]

Skilled birth attendants: In Malawi, consistent with the World Health Organization (WHO), a skilled birth attendant (SBA) is defined as a health provider who is trained to manage normal labor and delivery and who can recognize obstetric and newborn complications and refer as appropriate. SBAs include physicians, clinical and medical officers, medical assistants, registered nurse-midwives, and nurse-midwife technicians. Almost all clinical personnel in

[7] http://hdrstats.undp.org/en/countries/profiles/MWI.html
[8] World Economic Outlook Database-October 2013, International Monetary Fund.
[9] http://www.unicef.org/infobycountry/malawi_statistics.html
[10] *Ibid.*
[11] Zimba E. et al. Newborn survival in Malawi: a decade of change and future implications. *Health Policy and Planning* 2012;27:iii88–iii103.

Malawi are SBAs and should be trained in HBB. However, midwives play a much larger role in providing delivery services in Malawi than do other types of providers—61 percent of deliveries in Malawi are attended by midwives versus 11 percent attended by all other types of providers combined—and are thus prioritized for HBB training.


Health center in Dedza district, Malawi

Quality of management of newborns not breathing at birth: The emergency obstetric and neonatal care (EmONC) needs assessment[12] provides information on the quality of resuscitation management in Malawi in 2010. The assessment measured providers' knowledge regarding various aspects of resuscitation management. Surveyed providers achieved low scores for knowledge of preliminary steps of neonatal resuscitation (average score: 3.8 out of 8), how to resuscitate using bag and mask (3.1 out of 5) and steps to take if baby does not begin to breathe (1.6 out of 6). Many health centers were found to have inadequate stocks of basic neonatal resuscitation equipment: 29 percent had mucus extractors, 73 percent had face masks, and 80 percent had ventilator bags.

Potential for effectiveness of HBB given country context: In Malawi, two factors create the potential for HBB to achieve high impact on newborn mortality: (1) high rates of SBA attendance of deliveries and (2) a relatively uniform health system. Almost three-quarters of newborns are born in the presence of SBAs—SBAs who can be trained to provide high-quality resuscitation management through HBB. The health system in Malawi is extremely unified, composed almost entirely of government facilities and CHAM facilities. Employees in both types of facilities are employed by the government and are subject to government policies, service delivery guidelines, and standards. This greatly facilitates the objective of training all SBAs in HBB and requiring them to follow the HBB approach to resuscitation management.

[12] *Ibid.* 5.

Methods

An independent consultant ("Consultant") was chosen to lead 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 Malawi and Washington, D.C. The MCHIP Newborn Health Advisor from the Washington, D.C., office accompanied the Consultant on a visit to 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 Newborn Health Advisor traveled to Malawi from August 26 to September 6, 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: Interview 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 Save the Children staff were not present during the interviews.

Respondent categories: The respondents who were interviewed for the process documentation included the following: Ministry of Health (MoH) officials at the national, regional and district levels (n = 6); representatives from regulatory and academic institutions including nursing and midwife councils, nursing colleges, and medical schools (n = 3); health workers and administrators currently providing services at various levels of the health system (n = 15); representatives from partner organizations including Save the Children (n = 7); and, researchers serving as investigators in the ongoing HBB evaluation in Malawi (n = 2). Respondents were selected through consultations between the Consultant, the MCHIP Newborn Health Advisor, and staff members of Save the Children's country office.

Facility visits: The Consultant and the 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 in Lilongwe. The facilities that were visited in Dedza, Mzimba, and Nkhotakota districts were chosen by Save the Children's staff members in consultation with the Consultant and the MCHIP Newborn Health Advisor, and were considered to be facilities where HBB was relative well-established.

Audits: The Consultant and the 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 level as part of the PD. The reports and documents are available on the MCHIP website.

Phase One: Preparing for the Scale-Up

Preparing for 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 a commitment among partners to implement HBB. This phase also includes developing policy, constructing partnerships and obtaining funding, drawing up detailed plans for the scale-up, and adapting HBB for the local context.

POLICY AND STRATEGY DEVELOPMENT LEADING TO ADOPTION OF HBB IN MALAWI

Initial discussions regarding the possible introduction of HBB in Malawi were held during a meeting between representatives from Save the Children and the Reproductive Health Unit[13] (RHU) of the MoH in January 2011. This meeting resulted in a decision to have key Malawian public health leaders participate in the HBB Training of Master Trainers in Addis Ababa, Ethiopia, in February 2011, which was conducted by MCHIP.

Building awareness and developing leadership for HBB: The Malawian Master Trainers viewed reducing newborn mortality due to asphyxia as a key component of the effort to achieve MDG4 in Malawi. The Master Trainers met together while they were still in Addis to map out their strategy for introducing HBB in Malawi. They realized that HBB was a new approach to resuscitation management and that its introduction might face resistance. They determined that the high newborn mortality rate in Malawi, coupled with findings from the *Malawi 2010 EmONC Needs Assessment Final Report,* which showed most delivery personnel in Malawi have unacceptably low skill levels in resuscitation, provided adequate rationale for taking action to strengthen the ability of delivery personnel to resuscitate asphyxiated newborns. The Master Trainers viewed HBB as a relatively simple intervention that had been shown to reduce newborn mortality and that was well-suited for a low-resource environment like Malawi.

Developing consensus: Save the Children/MCHIP and the RHU developed a plan to begin building consensus for HBB through a meeting attended by all major stakeholders. RHU subsequently hosted and funded the first HBB stakeholders meeting in Malawi in March 2011. The AAP (represented by Professor George Little) worked in close collaboration with Save the Children/MCHIP and RHU throughout this process. Demonstration stations were set up at the stakeholders meeting to showcase the HBB approach to resuscitation. A wide variety of stakeholders attended, including representatives from the medical and nurses teaching colleges, professional regulatory bodies, partner and donor organizations, officials from the MoH, and Professor George Little. All stakeholders voiced support for the introduction of HBB and there was a clear consensus that national scale-up of HBB should begin immediately. HBB was accepted as an intervention that would work in Malawi, given its demonstrated impact in other countries such as Tanzania. For this reason, HBB was not initially piloted in Malawi as part of a decision-making process regarding whether or not to scale up the intervention, but was rather scaled up in phases.

Inclusion of HBB in official policy documents: The MoH has taken the approach that HBB will be incorporated into policy and strategic documents as they are reviewed and updated on an ongoing basis. Key policies and strategies in Malawi that already have been revised to reflect HBB include the *Reproductive Health Strategy (2011 to 2016)*, the *Reproductive Health Service Delivery Guidelines*, the *Road Map for Accelerating the Reduction of Maternal and Neonatal Morbidity and Mortality in Malawi*, *Integrated Maternal and Newborn Health Training Manual*, and the *Obstetric Protocols*. Major stakeholders, including government,

[13] The Reproductive Health Unit was elevated to the level of Reproductive Health Directorate in 2012.

nongovernmental organizations (NGOs), regulatory bodies, donor partners, teaching institutions, and medical councils have been involved in this process.

Policy development process: The development of HBB-related policy goes through the Sexual and Reproductive Health Technical Working Group (SRH-TWG), which is informed and advised by the Safe Motherhood Subcommittee and the HBB Taskforce. HBB was initially presented to the SRH-TWG and discussed within that body; once the SRH-TWG had approved it, it was taken to the MoH and presented to the Secretary of Health and the directors of different departments. The ministry subsequently endorsed HBB as a high-impact intervention to reduce newborn mortality in Malawi. HBB policy was developed primarily with the support of in-country resources. Professor George Little from AAP has served as an ongoing technical advisor for the HBB Team.

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

The *Helping Babies Breathe National Scale-Up Implementation Plan* ("Scale-Up Plan" or "SUP") was developed and documented in March 2011 by the RHU and its partners. The document was framed around the goal and objectives of the HBB initiative (see Box 1).

Box 1. Goal and objectives of the HBB National Scale-Up Implementation Plan

Goal: To reduce child mortality by addressing one of the most important causes of newborn death—birth asphyxia—thereby contributing to the achievement of MDG4.
Objective 1: Increase knowledge, skills, and practices of skilled birth attendants for the immediate management of birth asphyxia in all health care facilities in Malawi.
Objective 2: Ensure availability of equipment for newborn resuscitation in all health facilities and training materials and equipment for HBB trainers and facility-based service providers.
Objective 3: Strengthen systems to monitor maternal and newborn care, including birth asphyxia management.

The SUP consists of background information, the goal and objectives, proposed program activities ordered by objective, and a description of the role of major partners. The document is complemented by the *Malawi HBB National Rollout Plan,* which is in an Excel format and categorizes program activities by objective in greater detail.

Key elements of the original HBB scale-up plan

Provision of HBB training and implementation equipment: There are two types of resuscitation equipment that are relevant to the practice of HBB:

1. **Training equipment**, one set per facility, to be used for practice at worksites and training (i.e., not on live newborns), which consists of a NeoNatalie mannequin, a penguin sucker, an ambu bag and two masks—sizes "0" and "1"
2. **Implementation equipment**, which is the same as training equipment minus the mannequin, must be stocked in adequate numbers (see Section 10) in each type of facility and is used in the delivery ward to resuscitate distressed newborns.

The SUP documented the MoH's commitment to procure all necessary implementation equipment for the HBB initiative. Partners committed to procuring all training equipment. The MoH facilitated the procurement of HBB training equipment by exempting partners from paying custom duty.

Cascade in-service training design: Initial HBB training efforts were to focus on (1) conducting several training of trainers (ToT) to prepare a core group of Master Trainers and District

Trainers and (2) having District Trainers in turn train health providers in districts where funding was available.

How many providers to be trained through in-service training per district: The target for the number of delivery providers to be trained was set at 30 per district in the SUP. As there are 28 districts in Malawi, the SUP called for 840 delivery providers to be trained in HBB.

Who participates in in-service training: Resources for training were extremely limited and thus the focus was on training providers who are active in the delivery ward. Nurse-midwife technicians (NMTs) conduct almost all deliveries in Malawi and thus were prioritized for HBB training. Among NMTs, providers who had already taken the Integrated Maternal and Newborn Care In-service Training (IMNCT) were initially prioritized for participation in the HBB training. The rationale for this decision was that HBB had recently been inserted into the IMNCT curriculum and thus providers who had already taken IMNCT had missed HBB, while providers who had not participated in IMNCT would be trained in HBB when they eventually participate in IMNCT. In reality, partners found that the few service providers already trained in IMNC were conducting trainings and were generally not "hands-on" providers in the delivery ward. The decision was then taken to train NMTs and clinical officers who were active in the delivery ward as well as other types of SBA, including anesthetists who assist with advanced methods of resuscitation, in order to maximize team work during the performance of resuscitation.

Which facilities are prioritized within a district for in-service training: The target was to train at least one delivery provider in each health center/community hospital and to train larger numbers of providers at district hospitals. Participants in the HBB training were made responsible for informally training their colleagues in HBB when they returned to their own facility.

How to sequence districts and finance HBB training and rollout: The original SUP called for HBB training to be conducted during 2011 in 13 of Malawi's 28 districts, resulting in a total of 390 providers trained. Ten of these 13 districts were supported by MCHIP while three districts were supported by Save the Children. The SUP called for Save the Children to support training for 234 service providers during 2012, leaving 216 providers to be trained by other unspecified partners (the Support for Service Delivery Integration (SSDI) project later filled much of this gap). The planned result was for 840 (390 + 234 + 216) providers to be trained in HBB by the end of 2012.

Delivering in-service training to providers from different types of facilities—government, CHAM, and private: Almost all facility deliveries in Malawi take place either in government or CHAM facilities. Providers from government and CHAM facilities are given equal priority for participation in HBB training.

Including HBB in pre-service education: The SUP described plans for (1) including HBB in the pre-service curriculum for medical and nurse training institutions and (2) providing training in HBB for those pre-service trainers who are responsible for teaching maternal and newborn care for both government and CHAM training institutions. The pre-service HBB trainings were initiated by a lecturer from Kamuzu College of Nursing who had been trained as a Master Trainer in the original MCHIP-funded HBB training in Addis Ababa.

HBB FUNDING, INPUTS, AND PARTNERSHIPS

The HBB Global Development Alliance has played a crucial, overarching role in advancing the global HBB agenda, including helping to make HBB materials and equipment available at cost to many countries, including Malawi. The Malawi government has in turn ensured that all

HBBN equipment is imported duty-free. This has resulted in HBB materials and equipment being easily available and has also facilitated their procurement by implementing partners.

The scale-up of HBB in Malawi has been supported by a variety of organizations that include MoH, Save the Children (in partnership with Johnson & Johnson, Save the Children/Italy, and Saving Newborn Lives (SNL), USAID (through MCHIP and SSDI), Latter Day Saints Charities (LDSC), UNICEF, and AAP.

Inputs

HBB has not been formally costed in Malawi in terms of what it costs to scale up the program. Given the large number of funding organizations and the complementary manner in which multiple organizations have supported the scale-up—often in the context of projects that have multiple objectives and activities—it is not possible to cost the separate inputs contributed by each organization in financial terms. Categories of inputs and their main contributors are described in the box below.

Box 2. Categories of inputs and contributors to HBB initiative

Inputs	Contributors
Infrastructure and facilities	MoH
Personnel	MoH
Training and refresher training	Primarily by partners with some MoH contribution
Equipment and supplies	Primarily by partners (new equipment for worksite training as well as for use in delivery wards) with some contribution from MoH (existing and some new ambu bags, suction tubes machines, equipment funded through District Implementation Plans, etc.)
Routine district supervision	District Health Office (DHO) and partners
Zonal and national supervision	Zonal Health Offices, MoH and partners
Meetings, workshops, study tours	MoH and partners

Plans for funding future HBB activities and anticipated expenses can be found in individual project budgets. There is no centralized HBB funding plan for the country as a whole.

HBB partners: Roles and contributions

Significant partners in the HBB initiative and their roles and inputs with regards to supporting the scale-up are noted below.

MoH: The MoH has overall responsibility for scaling up HBB; develops policy; provides and maintains facilities, human resources, and infrastructure; conducts trainings for top-level MoH and district managers and central hospital managers; supports supervision, information collection and management, and other health system functions.

Save the Children *(primarily through funds provided by Johnson & Johnson (J&J) and Save the Children/Italy, although SNL and the Child Survival and Health Grants Program have also contributed)*: Save the Children through SNL has advocated to incorporate HBB as a high-impact intervention in Malawi's Every Newborn Action Plan; together with the government, Save the Children has assumed overarching responsibility for supporting the national scale-up of HBB, coordinating and operationalizing support from different funding sources (e.g., USAID, J&J, Save the Children/Italy, LDSC) and programs (e.g., MCHIP, SSDI), including the employment of a full-time HBB Coordinator; supports ToT for District Trainers in 18 districts and provider training in SC-supported districts; provides equipment for training and implementation in Save the Children-supported districts and other districts on an as-needed

basis; supports the inclusion of HBB in pre-service education through coordination with Nurses and Midwives Council of Malawi and Midwifery training colleges to ensure HBB is incorporated in the syllabus and curricula; supports biannual review meetings and stakeholder meetings (2012 & 2013); provides financial or technical support to districts in need; provides a specialist who coordinates and provides technical assistance to monitoring and evaluation efforts for HBB at the RHU in the MoH as well as at the zonal and district levels; facilitates quarterly and biannual review meetings at zonal and national levels to assess district-level progress in the implementation of MNH activities that include HBB and to develop strategies to strengthen implementation; and, supports partners to draft proposals to apply for funding to implement HBB. Save the Children/Italy supported provider training, provision of equipment, and supervision in three districts under the MNH Project and is currently providing the same support for three additional districts under the Malawi Integrated Child Survival project.

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 Malawi. USAID has provided extensive funding for HBB in Malawi through MCHIP and SSDI.

MCHIP (*in 10 districts*): MCHIP, led by JHPIEGO, with Save the Children providing leadership for newborn health activities, supported ToT and provider training; provided training materials/equipment; supported the inclusion of HBB in pre-service education; and, conducted supportive supervision.

SSDI (*in 15 districts*): SSDI (through Save the Children) has supported ToT and provider training; provided equipment for training and implementation; supported the development of HBB information systems; and conducted supportive supervision.

Latter Day Saints Charities (*in two districts*): LDSC has procured equipment, supported training and will support monitoring and evaluation (M&E) activities.

UNICEF (*in four districts*): UNICEF has supported provider training.

AAP: AAP developed the HBB curriculum and materials and has catalyzed the establishment of the HBB GDA at the global level through its co-leadership role with USAID. In Malawi, AAP provided training equipment for initial HBB trainings and provided technical support to the HBB scale-up through Professor George Little.

ADAPTATION OF HBB FOR THE LOCAL CONTEXT

AAP developed the HBB curriculum, which contains of a core set of materials to support the implementation of HBB. These materials consist of key tools and job aids used during the training including the *HBB Facilitator Flip Chart*, the *HBB Action Plan*, and the *HBB Learner Workbook*. Countries that wish to use HBB materials are encouraged to adapt them for local circumstances, but all proposed changes must be approved by AAP as the materials are copyrighted.

The core HBB approach and materials were not adapted for use in Malawi and are essentially being used in their original form. Key stakeholders in Malawi stated that the rationale for not revising the materials was that HBB methods represented either no change or else an improvement on newborn resuscitation methods that were previously followed in Malawi.

There were no significant disputes among stakeholders in Malawi regarding the technical components of HBB. Key respondents stated that this was due to (1) all stakeholders were brought on board early in the process of adopting HBB and their buy-in was obtained before proceeding; (2) there were many similarities between previous Malawian resuscitation practices

and the HBB approach (some respondents termed HBB "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).

HBB stakeholders in Malawi recognized that HBB is designed to provide primary-level resuscitation and does not address advanced resuscitation techniques such as intubation and mechanical ventilation. They noted that less than one percent of asphyxiated newborns will need advanced resuscitation techniques. It was agreed that a discussion of how to deal with more advanced resuscitation techniques would take place once HBB had been rolled out.

Conclusions—Preparing for the scale-up

1. **Policy and strategy development**: The incorporation of HBB into official MNH policies and strategies was carried out successfully in Malawi. Several factors contributed to this achievement. Local leadership was strong—the government led the process, working hand-in-hand with key partners. Leaders of the HBB initiative built awareness and developed commitment through a consensus-based approach that was formalized during a meeting attended by all major stakeholders. A local study of the status of emergency obstetric and newborn care provided the rationale for the need to introduce HBB.
2. **Planning for the scale-up**: Planning for the HBB scale-up and documenting the HBB Scale-Up Plan (SUP) revealed strengths and weaknesses of the rollout approach. The process of developing the SUP was an opportunity for partners to commit to providing support, agree upon program objectives, and address operational issues. The MoH overcommitted when it agreed to purchase all HBB implementation equipment (described below), demonstrating the importance of ensuring that commitments can be met before proceeding.
3. **Partnerships and inputs**: The HBB initiative in Malawi enjoys wide support from a variety of partners, which has helped it to overcome many barriers. It has been a challenge to standardize the approach to implementing HBB across so many partners. Funding limitations among some of the partners has meant that some organizations could only support part of the rollout (e.g., training, or equipment, or monitoring and evaluation) in selected districts. The lack of a single dominant implementing unit, therefore, has resulted in a rollout process that is somewhat fragmented. Save the Children has been the primary partner to the MoH in implementing the HBB scale-up and has provided intensive support to varied aspects of the rollout. Indeed, it is difficult to envision HBB being taken to scale without strong partner support in almost any developing country. In the case of Malawi, it is worth considering what benefits would have resulted if partners had been able to fund, coordinate, and implement the national rollout of HBB through a single centralized unit. Other countries have benefitted from such an approach.

   While the substantial contribution of the MoH to funding the health system itself must be recognized, it should also be noted that the MoH has not been able to make a substantial financial contribution to the HBB rollout itself in terms of training and provision of HBB equipment—a topic that should be addressed as the long-term sustainability of HBB is discussed.
4. **Adaptation of HBB for local use**: Local authorities' ability to tailor an intervention prior to scale-up is considered to be a determinant of effective scale-up efforts. The AAP encourages countries to identify aspects of HBB that might be modified based on the local context, although the AAP reserves the right to approve or disapprove any proposed changes. In the case of Malawi, the HBB Taskforce did not feel that the HBB approach or materials need to be changed. HBB was not seen as a radically different way of resuscitating newborns, but rather a simplified approach that included improved equipment and a different framework for managing the first minute of a newborn's life.

Phase Two: Implementation of the Scale-Up

The second phase of rolling out HBB was the implementation of the scale-up. Once ownership was fostered and plans were made, planned activities are carried out and providers begin to practice HBB. This part of the report includes a description of how the Scale-Up Plan was used to guide implementation, how HBB training was implemented, how equipment was procured and distributed, how supervision and monitoring activities were carried out, and how referral systems were established.

IMPLEMENTATION OF HBB ON THE BASIS OF THE SCALE-UP PLAN

Section 5 of this report described how the HBB Scale-Up Plan was developed and its original approach to planning for training and the provision of HBB equipment. The SUP was developed in the pre-implementation phase of the HBB initiative and was envisioned to be a key tool to be used to guide the HBB scale-up. It is to be expected that plans for a complex scale-up effort such as HBB will change over time. This section of the report describes the extent to which the original SUP was followed as the HBB initiative was implemented and how and why the SUP was modified.

Provision of HBB equipment: The MoH originally committed to purchase HBB implementation equipment for use in the delivery wards and operation theaters in all facilities. Due to unforeseen circumstances that resulted in severe financial constraints, the MoH was unable to fulfill this commitment. Implementing partners were therefore asked to procure all equipment required for the HBB scale-up—both training equipment as well as implementation equipment. This resulted in significant delays in the provision of equipment in some districts. Further details are provided in Section 10 of this report.

Cascade training design: Three District Trainers were trained from each of Malawi's 28 districts early in the HBB initiative. The number of trainers per district has declined over time in some districts due to factors that include staff transfer and staff taking extended leave. This has not had a negative effect on the conduct of HBB trainings, as District Trainers from neighboring districts come to assist during training activities. However, being a District Trainers is more than just being a trainer; they are a valuable local resource as well as being a champion of HBB within the district. The HBB program in districts that do not have the planned numbers of District Trainers may suffer as a result.

How many providers to be trained in a district: The target number of delivery providers to train per district was changed from 30 providers per district to 30 percent of all delivery providers in the district in order to ensure adequate coverage in large districts.

Who is trained: Nurse-Midwife Technicians have continued to be prioritized for participation in training. Other types of providers, including anesthetists, pediatricians, and obstetricians, are also trained once adequate coverage of NMTs has been achieved.

Which facilities are prioritized within a district: The target of training at least one delivery provider in each health center/community hospital and training larger numbers of providers at district hospitals appears to have been achieved. Although many health centers have more than one provider trained in HBB, staff transfer has left some facilities without a trained HBB provider.

Challenges due to partnership framework and coordination structure: While good progress has been made in rolling out HBB over the 30 months since the initiative began, it has been a challenge to introduce HBB in some districts that do not have support from an external partner. Two barriers to scaling up HBB in a uniform, coordinated approach have been (1) the lack of a

single funding source that could adequately finance training activities and equipment procurement across all districts and (2) the lack of a strong central unit or body to coordinate the disparate elements of the HBB scale-up. The dual nature of the MoH's coordination structure for HBB—the Department of Clinical Services and RHU both play significant roles in this regard, and the government's National HBB Coordinator has been appointed from the Department of Clinical Services—has posed challenges to effective coordination and requires urgent attention in order to improve HBB program management.

The scale-up effort has been implemented through a patchwork of partners' contributions. HBB costs have been met by a variety of projects and donors, each of which cover selected districts and provide support to HBB (and often other MNH activities) during the project's lifespan. This has led at times to the responsibility for supporting HBB to be handed over from one project to another as some projects' grant periods have ended and others have begun. It should be noted that, to some extent, this has been a natural transition from one project to another among projects that are funded by the same donor and have similar mandates (e.g., from MCHIP to SSDI). The scale-up effort was further complicated when the MoH was unable to procure HBB implementation equipment as had been planned, forcing partners to locate funds to procure it. The high number of partners coupled with the project-focused support for HBB has resulted in a somewhat fragmented scale-up effort.

Training providers from different types of facilities—government, CHAM and private: The original strategy of equal prioritization of providers from CHAM and government facilities has continued successfully. No providers from private health facilities have been trained to date. There is one private hospital—Beitsaida Hospital in Lilongwe—that may take part in the HBB initiative in the future.

Overall progress in maintaining the timeline for scale-up: The approach to scaling up HBB—training only 30 percent of all delivery personnel, and often only one provider per facility—was adopted due to financial constraints and is clearly less than optimal. Even this target has proved to be ambitious; the original goal of training 30 providers per district in all 28 districts by May 2012 had still not been met by December 2013. The SUP has thus been modified and extended as the rollout of HBB has proceeded more slowly than planned.

Usefulness of the SUP: Several respondents noted that the process of developing the SUP was extremely valuable as it required all partners to work together in a broad planning exercise and discuss the resources that each could contribute. Respondents stated that the major failing of the SUP was that commitments were made that later were not met—the major example being the MoH's inability to purchase HBB implementation equipment. Some respondents noted that while it was perhaps optimistic to think that the government could make such a large financial contribution, it was felt to be important for the sake of sustainability, thereby strengthening MoH ownership of HBB and establishing a history of government support for the initiative.

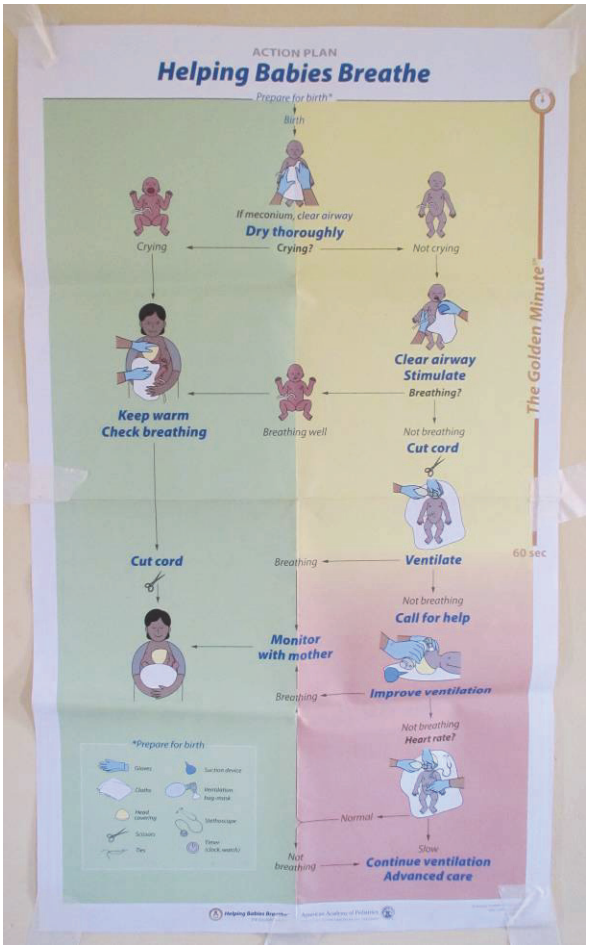
District orientation: Although it was not documented in the SUP, an important aspect of the implementation of HBB is the approach to involve district health staff and raise their awareness regarding the initiative when HBB is introduced in a new district. The first stakeholders meeting in 2011in Lilongwe was used to orient key DHO personnel from all districts in Malawi regarding HBB. Following this, and prior to beginning HBB training in a new district, the partner organization supporting HBB in the district conducts a briefing with the District Health Management Team (DHMT). This briefing is used to clarify roles of the DHMT and the partner in supporting the HBB rollout, reach agreement on activities that will take place, and identify participants in the HBB training. The DHMT is composed of the district health officer, the district nursing officer, the district environmental health officer, the district hospital administrator, and the district hospital accountant.

HBB EDUCATION: IN-SERVICE TRAINING, WORKSITE TRAINING, AND PRE-SERVICE EDUCATION

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

In-service training

The HBB approach: A two-day, competency-based HBB education 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 in the first minute. The HBB training is designed to present this new framework using an interactive, participatory approach in a structured environment where participants can become competent using the equipment and job aids that facilitate the HBB approach. Key equipment includes the NeoNatalie mannequin, the ambu bag, and two sizes of masks ("0" for preterm newborns, "1" for full-term newborns), and the penguin suction for clearing the newborn's airway. Key tools and job aids used during the training include the *HBB Facilitator Flip Chart*, the *HBB Action Plan*, and the *HBB Learner Workbook*. A trainer-to-participant ratio of 1:4 or 1:6 and a paired learning approach[14] are recommended. Facilitators of the HBB IST in Malawi 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 during training

HBB approach to birth asphyxia management versus pre-HBB approach in Malawi: HBB stakeholders in Malawi all stated that there is relatively little in the HBB approach that is new or different from what they had been taught previously. They said that what HBB has provided is a clear, standard approach for managing a newborn during the Golden Minute and simplified resuscitation procedures to follow for those newborns that require assistance. The HBB approach puts the focus on the newborn during this crucial moment, directs the provider to first check that the newborn is breathing properly and only then to proceed to other tasks such as cutting the cord.

[14] 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. Participants then switch roles and practice again. In this way, learners become teachers, providing feedback on skills to one another.

"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

All of the providers who were interviewed in Malawi as part of the PD were enthusiastic about the HBB approach and felt that it strengthened their ability to manage newborns' health during the Golden Minute and resuscitate asphyxiated newborns. Providers also noted that the penguin suction device that is provided as part of the HBB initiative is safer and easier to clean than the equipment that they used previously and facilitates their ability to resuscitate newborns.

Preparation of trainers: Seven national-level HBB Master Trainers were prepared through their participation in the original HBB training in Addis Ababa in 2011 and through subsequent Training of Master Trainers programs conducted by other Master Trainers in Malawi. Some Master Trainers are government employees while others are employed by partner organizations. Master Trainers in turn trained 72 District Trainers (three per district from 24 districts) in June and December 2011. District Trainers train SBAs with the support of Master Trainers and other partners. All District Trainers are government employees and most of them are SBAs actively providing delivery services in the districts where they are based.

Evaluation of participants in HBB training: Participants in the HBB training are required to achieve a score of 80 or above in the practical evaluation exercise that is conducted at the conclusion of the training. Almost all participants are able to pass on their first attempt. Those who cannot do so receive feedback from the facilitator and then repeat the exercise until they achieve a passing score. The Safe Motherhood Coordinator from the DHO (who is also a HBB District Trainer) follows up with any weak participants at their workplace to assess their performance of HBB-related procedures. This is relatively easy to do if the participant serves at the district hospital but can be more difficult to carry out if the participant is based at a health center due to the inadequate frequency of supervision visits to those facilities.

Strengthening the quality of HBB training: The design of the HBB training module contains elements that help ensure the quality of the training. These elements include comprehensive instructional materials, a standardized facilitator, participant ratio, checklists for assessing participant performance, physical space requirements, and the practical evaluation exercise—all of which have helped ensure the quality of HBB training in Malawi. The strongest District Trainers from mature districts (districts where HBB had been introduced previously) are well-known and are sent to districts other than their own to assist the local District Trainers to conduct initial HBB trainings and ensure compliance to training standards.

Challenges faced in the HBB training approach in Malawi: The primary challenge to the HBB training approach in Malawi has been the limited percentage of SBAs who are trained in HBB. Financial limitations led the HBB program to decide to train only 30 percent of SBAs per district, including at least one provider in each facility. While some districts have been able to train a higher percentage of providers, there remains a substantial percentage of SBAs who have not been formally trained in HBB. Trained providers are told to return to their own facilities and train others in HBB, but this approach appears to have generated little enthusiasm and has not been as successful as was envisioned.

Worksite training

Newborn resuscitation is a vital lifesaving skill. Through HBB, health workers improve their ability to provide routine care at birth as well as to perform resuscitation. However, even though asphyxia is a major cause of newborn death, opportunities to resuscitate newborns are relatively rare as cases of birth asphyxia are infrequent, particularly in low-volume maternity wards. For this reason, all providers who are trained in HBB are expected to practice their resuscitation skills on the NeoNatalie mannequin at their worksites in order to maintain their ability to resuscitate newborns when required. The provision of the NeoNatalie mannequin is designed to encourage practice of resuscitation under circumstances that approximate real situations to the greatest extent possible.

Opportunities for worksite HBB training: 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 what they have learned. They are also told that they should periodically bring their co-workers together and all take turns practicing resuscitation using the NeoNatalie. Nurses and midwives in Malawi are required to participate in the continuous professional development (CPD) program. The CPD program stipulates that each nurse/midwife conduct a certain number of training sessions for their colleagues on topics of their choice for which both the trainer and the participants receive CPD points. All nurse/midwives must accumulate a specified number of CPD points each year in order to renew their registration, which is required for them to provide services. Nurse/midwives who have been trained in HBB are encouraged to earn CPD points by training others in HBB.

Providers' reports on practicing HBB at their worksites: While providers trained in HBB are supposed to return to their facilities and orient/train their untrained colleagues, this activity has not been as successful as was envisioned. Providers do report that worksite practice of HBB takes place in some facilities, depending on availability and interest of trained and untrained staff. Health providers and other HBB program managers interviewed by the Process Documentation Team reported that untrained SBAs prefer to participate in formal HBB training compared to being informally trained at their worksites and thus show limited interest in participating in unofficial worksite training. During interviews conducted as part of the PD, there was no mention of paired learning for HBB among respondents and no SBAs reported regular systematic practice of resuscitation at set times in the facilities, even though this is a key learning methodology that is promoted during the HBB training. Records of knowledge, skills, and worksite practice related to HBB are not maintained in the facilities that were visited by the Consultant and the MCHIP Newborn Health Advisor.

Practicing HBB during supervisory visits: Supervisory visits represent an opportunity to assess SBAs' HBB-related skills and knowledge and to provide teaching and guidance as necessary. In practice, supervisory visits in Malawi do not achieve high enough coverage to fulfill this role at scale (see details in Section 11 of this report). The Malawian HBB Taskforce developed the *HBB Mentorship / Supervisory Checklist* to assess HBB skills during supervisory visits. However, supervisors report that when integrated supervision is conducted, details regarding how to perform resuscitation according to HBB protocols are rarely checked by supervisors as they lack time due to the wide range of areas that they need to monitor. Comprehensive supportive supervision and coaching solely focused on HBB is limited to HBB-dedicated supervision visits that are conducted by national-level staff members that are supported by partners. These visits are relatively infrequent and are not designed to provide supervisory support at high coverage levels.

Availability of HBB equipment dedicated to practice: The provision of training equipment immediately following the HBB training to all facilities where participants provide services is a prerequisite to providers being able to share their skills with other untrained providers and

maintain their resuscitation skills through worksite practice. Training equipment was provided immediately after training in 20 of the 26 districts where SBAs have participated in HBB training, although this equipment was diverted to the maternity ward in many facilities as implementation equipment was not provided in a timely manner. This compromised the ability of health providers to share and practice their skills in order to provide quality resuscitation services following the HBB training.

Pre-service education

The inclusion of HBB in the PSE curricula for all relevant medical cadres is one of the keys to the long-term sustainability of the HBB initiative. While IST is required to introduce HBB to providers who are currently providing services, PSE is the crucial strategy for ensuring that providers of the future accept HBB as the standard way to conduct normal deliveries and resuscitate asphyxiated newborns.

Including HBB in PSE: The *Guide for Implementation of HBB*, developed by the AAP, does not prescribe an approach to adapt HBB for inclusion in PSE. The standard two-day HBB training module as presented in the guide has been adopted for inclusion in PSE curricula in Malawi. Students cannot always be taught HBB through paired learning during PSE because of the large number of students in the training colleges. However, the colleges have placed mannequins in the skills laboratory to ensure that students are able to practice on their own time with the aid of a clinical instructor. Students then record their performance of resuscitation practice on the mannequins in a log book.

HBB has been included in the essential newborn curriculum in all 13 of the colleges that currently offer midwifery courses in Malawi, and the colleges are in the process of ensuring that HBB is taught to all students. HBB training has not yet been included in the PSE curricula of other health cadres being trained as SBAs in the medical colleges—specifically, for students training to become medical assistants, clinical officers or medical officers. If they do not have qualified staff among their own faculty, colleges of nursing request HBB-trained lecturers from other colleges to teach their students.

Challenges to inclusion of HBB in PSE: The primary challenge to the *effective* inclusion of HBB in PSE in Malawi is the lack of clinical practice sites (in delivery wards themselves) with strong learning environments where students can develop resuscitation skills. Respondents 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 formation of a partnership with the Nursing and Midwives Council of Malawi was crucial for ensuring official support for the inclusion of HBB in PSE for nurses and midwives.

Evaluation of PSE students in HBB: During their clinical practicum, nurse-midwives are assessed on a specified set of skills for which they must demonstrate competence. Those skills that are 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. As a result, nursing students show less interest in learning HBB than they do in learning other, higher priority skills. Respondents reported that evaluation of HBB resuscitation skills does not appear to be a strong component of PSE.

HBB EQUIPMENT AND LOGISTICS SYSTEMS

Nurse-midwife technicians in 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 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.

Guidelines in Malawi regarding HBB equipment: Facilities where HBB-trained providers work are supposed to receive a supply of HBB equipment for both training and implementation (defined in Section 5 of this report) immediately after the provider completes the HBB training. HBB trainers are supposed to have their own set of training equipment for use during HBB trainings that they facilitate. A minimum package of implementation equipment has been defined for each type of health facility as follows:

- Health centers: two sets (i.e., two ambu bags; two sets of masks sizes 0 and 1; two penguin suckers)
- Community hospitals: five sets
- District and central hospitals: ten sets.

Each facility with a trained HBB provider is supposed to have at least one training set, while larger facilities may have more if needed.

Procurement of HBB equipment: Although the MoH had originally pledged to procure all HBB implementation equipment, it was unable to fulfill its commitment due to a lack of funds. While partners have made substantial efforts to fill this funding gap and procure necessary equipment, an equipment gap has resulted in many districts. Substantial delays in supplying HBB equipment have had a negative impact on the quality of implementation of HBB.

HBB equipment is procured by partners through their organizations' respective administrative systems. Some partners have faced barriers in procurement resulting in significant delays in obtaining needed HBB equipment. None of the HBB equipment can be sourced locally and this has made it difficult to order equipment and make it available in a timely manner. The government's Central Medical Store (CMS) does not supply the resuscitation equipment that is distributed through the HBB initiative although it does stock an older-model ambu bag. Purchases of HBB equipment thus need to be made through international dealers.

There is no system at this time to replace broken or missing HBB equipment. A few DHOs have made efforts to purchase HBB equipment by including HBB procurements in their district implementation plans; however, DHOs only receive a fraction of the funds that they are allocated by the MoH and even if they do receive funds, they are not able to procure penguin suckers or the new style of ambu bags, as they are not supplied through the government's CMS.

Distribution of HBB equipment: Partners utilize the existing MoH supply chain system to distribute HBB equipment to districts and facilities. Equipment can be given directly to DHOs for distribution to health facilities or can be given to the government at the zonal or central levels for distribution to DHOs. DHOs maintain records of the distribution of HBB equipment to individual health facilities.

Provision of HBB equipment to providers trained in HBB: The HBB initiative in Malawi has experienced perhaps its greatest implementation challenges with regards to the provision of equipment to facilities where trained providers work. When it became clear early in the HBB initiative that equipment could not be supplied to trained providers as planned, the MoH and its partners made the decision to proceed with training even though equipment could not be supplied. Training providers in HBB without providing them with access to full sets of equipment (i.e., training and implementation) immediately following the HBB training has become an approach that is followed in most districts.

Nurse-Midwife Technician with HBB equipment

Implementing partners have made extensive efforts to move the HBB initiative forward despite the barriers caused by the lack of planned equipment. In some districts, partners have handed over responsibility for provision of equipment to other partners as their projects were phased out, while in other districts partners have borrowed equipment from other partners that had equipment in stock. The table below summarizes when facilities in different districts received training and implementation HBB equipment.

Table 2. Timeliness of receipt of HBB equipment

Status	# districts	Districts
• Received both TE and IE IAT	3	Neno, Blantyre, Chiradzulu
• Received TE IAT • Received IE 1 to 24 months after training	16	Dedza, Dowa, Kasungu, Lilongwe, Nkhotakota, Ntchisi, Chitipa, Mzimba, Nkhata Bay, Rumphi, Machinga, Mulanje, Nsanje, Thyolo, Phalombe, Zomba
• Received TE IAT • Have not yet received IE	2	Ntcheu, Mwanza
• Received both TE and IE 1 to 12 months after training	5	Salima, Karonga, Balaka, Chikwawa, Mangochi
• No HBB activity to date due to lack of funding	2	Mchinji, Likoma

Key: training equipment (TE); implementation equipment (IE); immediately after training (IAT)

The HBB initiative has had greater success supplying training equipment in a timely manner than implementation equipment. Providers in 21 of the 26 districts where HBB has been introduced received training equipment immediately after training, while providers received implementation equipment immediately after training in only three of 26 districts (i.e., Neno, Blantyre and Chiradzulu districts).

How providers trained in HBB have managed without access to full sets of HBB equipment: Most providers who were trained in HBB returned to their facilities following the training with one set of training equipment and no implementation 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. Providers from the five districts that received neither training nor implementation equipment immediately following the training were requested to use previously existing equipment. Some providers 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.

SUPERVISION OF THE PROVISION OF HBB SERVICES

HBB stakeholders in Malawi consider effective supervision of HBB activities to be crucial to the success of the HBB initiative. The provision of high-quality supervision of HBB activities in Malawi comprises one of the three HBB program objectives. The steps taken to integrate HBB supervision into the MoH supervisory system are described below.

Structure of supervision of MNH activities in Malawi

The supervision of MNH (including HBB) at the facility level in Malawi can take place through district-level, zonal-level, or national-level supervision activities.

District-level supervision is supposed to be conducted by a team from the DHO on a monthly basis. The District Safe Motherhood Coordinator is a member of the supervision team. This type of supervision is severely underfunded and many facilities receive no or only one visit per year. Partners support district-level supervision in some districts.

Zonal-level supervision is conducted by members of the Zonal Health Support Office on a quarterly basis in each district in the zone. There are four Zonal Health Support Offices in Malawi. Zonal-level supervision is generally better-funded and thus stronger than district-level supervision; however, supervision teams from the zones have much more ground to cover so they only manage to cover a subset of all facilities. In addition, zonal-level supervisors may have been trained in HBB, but since they are not hands-on providers, their skills in HBB are not based on actual clinical practice. Zonal-level supervision is generally government-funded.

National-level supervision is conducted by MNH Program Officers from the Reproductive Health Directorate of the MoH on a quarterly basis. The goal of this supervision is not to achieve high coverage but rather to understand how programs are being implemented in the health facilities; as such, there may not be any transfer of skills during this supervision activity. This supervision does occur as planned (unlike district-level supervision) but only covers a small number of health facilities. Partners may support national-level supervision.

Dedicated HBB-specific supervision is performed at times under a variety of circumstances. Program managers from HBB partners occasionally form a team with officials from the RHU and go to the field specifically to supervise and observe the implementation of HBB. At other times program managers from partner organizations who are in the field for related work may visit local facilities and conduct HBB-specific supervision on an ad hoc basis.

Information related to HBB generated during supervision visits: Information related to HBB that is generated during supervision visits may include human resource data on the availability and number of health workers trained in HBB working in the maternity department at the time of visit; availability, functionality, number and type of resuscitation equipment, such as bag and mask and suction apparatus; HBB data documentation in registers; data from use of the *HBB Skills Performance Checklist* to assess providers' skills in resuscitation; and status of timely data reporting by facilities using the HBB Reporting Form.

Supervision of HBB: HBB supervision topics or questions have been built into the government's *Integrated MNH Supervision Checklist*. The supervision of HBB has thus been integrated with the supervision of other MNH activities. Supervisory teams also can use the supplementary *HBB Mentorship/Supervision Checklist* to check HBB-related skills.

There are two critical aspects of supervision that require action in order to strengthen the effectiveness of supervision of HBB *at high coverage* (i.e., across a meaningfully large number of facilities and providers). The first is to make sure that integrated MNH supervision occurs as scheduled through the government routine supervisory system. This would ensure that all facilities and providers receive the supportive supervision that they need to maintain or improve their skills in resuscitation over the course of a year.

The second factor is that those supervision visits that do take place are very rushed, as supervision teams are often integrated and have a large number of areas that they are supposed to check in a very limited amount of time. Amidst the rush of an integrated supervision visit, it is difficult for supervisors to provide meaningful guidance on HBB.

Respondents noted that the providers and facilities that receive effective supervision in HBB are those few facilities that (1) receive a supervision visit from a dedicated HBB Team that only supervises HBB or that (2) have a strong internal supervision system whereby staff members at the same institution supervise and teach each other. Among these two options, the latter may hold the greatest potential to improve HBB supervision at high coverage.

MONITORING IMPLEMENTATION AND SCALE-UP OF HBB IN MALAWI

The HBB Team in Malawi has made extensive efforts to monitor the HBB scale-up, which has included the introduction of an HBB register, the development of an HBB performance monitoring framework that is specific to the Malawi HBB initiative, and the addition of an indicator into the national health management information system (HMIS) that describes resuscitation of asphyxiated newborns.

HBB monitoring tools: The key HBB monitoring tools are the maternity register, the HBB register (HBBR), and the HBB reporting form (HBBRF). Copies of these forms can be found on the MCHIP website. The maternity register is a standard government register that predates the introduction of HBB in Malawi, while the HBBR and the HBBRF were developed and introduced in March 2012 as part of the HBB initiative, almost one year after the first district-level HBB trainings were conducted in Malawi. The HBBR collects information that can be used to calculate indicators recommended in the AAP *HBB Implementation Guide*. There are two versions of the HBBRF: facility-level (for reporting to the district) and district-level (for reporting to the national HMIS). Neither the HBBR nor the HBBRF are official HMIS documents and thus it is possible that they will not remain in use beyond the initial scale-up period of HBB.

The maternity register is used to record essential details of the deliveries of all newborns that take place in government or CHAM facilities. It has one column where "Asph" is pre-printed on the register; the delivery attendant circles this if the newborn experiences birth asphyxia (this

information is currently used to calculate the HMIS indicator "percentage of newborns that experience birth asphyxia"). Delivery attendants have been instructed to fill out the HBBR only for newborns for whom Asph is circled in the maternity register. The HBBR is then used to record information that includes the type of resuscitation performed, immediate newborn care received, newborn complications, antibiotics given, and newborn outcomes. Delivery personnel aggregate data from the HBBR in their own health facilities on a monthly basis and transfer them to the HBBRF. They then send the HBBRF to the DHO where it is entered into the HMIS.

Monitoring achievement of HBB program objectives: The Malawi HBB program constructed 20 performance monitoring indicators in 2011 to track the progress of the HBB initiative (a list of the indicators can be found on the MCHIP website). The indicators are categorized by the three HBB program objectives and designed to measure their achievement. The data sources used to measure them include the government HMIS, the HBBR, HBB program records, supervisory reports, and a facility survey activity. While the performance monitoring indicators and their numerators and denominators are carefully defined, the plan to measure them is ambitious and requires significant effort beyond the capabilities of the routine government HMIS. It does not appear that these indicators are being carefully measured across all districts and reported at a national level in a systematic manner.

HBB indicators in the national HMIS: One new indicator of resuscitation management—the percentage of newborns asphyxiated at birth that survive following resuscitation—has been added to the HMIS as a standard indicator following the introduction of HBB. This indicator 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. It is unclear what direction the integration of the current HBB information system into the national HMIS will take. Some respondents stated that it is unlikely that the HBBR will become a permanent part of the government HMIS.

Training in use of the HBB monitoring tools: The HBBR was introduced mid-way through the HBB scale-up, which resulted in some problems as providers who had already been trained in HBB did not know how to use it correctly. The current two-day HBB training for health providers was originally one and a half days in duration but was lengthened to two days when the HBBR was introduced so that participants could be trained to use it.

Quality of HBB monitoring data: The Consultant and MCHIP Newborn Health Advisor carefully reviewed entries in the maternity registry, HBBR, and HBBRF in six health facilities in three districts and triangulated data between the registers to check for consistency and accuracy. They found significant problems in the way that data were recorded and reported in five of the six facilities. Some of the problems included (1) lack of congruence between the maternity register and HBBR—some newborns noted in the register as having asphyxia did not have a corresponding entry in the HBBR, while some newborns with an entry for asphyxia in the HBBR were not recorded in the register as having experienced asphyxia; (2) some providers entered newborns who had not experienced asphyxia in the HBBR, primarily newborns who were pre-term or who had contracted infection; and, (3) in some facilities, the aggregate totals reported on the HBBRF did not correspond with the actual totals from the HBBR and the maternity register. These findings led members of the PD Team to conclude that the HBB data from the maternity register and HBBR at the facilities they visited are not currently of sufficient quality to be used to monitor the HBB program and guide HBB programming decisions.

Use of HBB monitoring data: The primary levels at which HBB data could be used for facility or program management are at the facility, district, and national levels. Among the facilities visited by the PD Team, most facility providers could not describe HBB-related data for their

own facilities and it did not appear that these data were being used for facility management purposes. Similarly, the team did not observe any examples at the national level of the use of monitoring data to guide program management.

While the HMIS does report data that describe the number of stillbirths, newborns with asphyxia, and neonatal deaths, it does not appear that there has been a systematic assessment of change in these indicators following the introduction of HBB in Malawi.

HBB evaluation: MCHIP, through the Institute for International Programs at The Johns Hopkins University, has recently conducted a performance evaluation of the HBB program in Malawi. Data from this effort were being analyzed at the time that this process documentation was conducted. Given the limitations of the monitoring data as described above, the HBB evaluation represents the best opportunity to use quantitative data to assess the performance of the HBB program at this time.

REFERRAL SYSTEMS FOR HBB

HBB is an approach for managing the first minute of a newborn's life, including specific, sequential guidance on the initial steps that should be taken to resuscitate a baby who cannot breathe. HBB protocols specify that newborns who do not begin breathing following stimulation, clearing of the airways, and use of the bag-and-mask should be declared dead after ten minutes. Babies who are still breathing with difficulty after ten minutes should be referred to a higher-level facility for more advanced treatment. With the exception of those newborns who are declared dead after ten minutes of resuscitation with bag and mask, HBB does not provide guidance for the management of newborns who do not respond completely to these basic resuscitation measures other than to recommend referral.

In Malawi, district and central hospitals provide secondary and tertiary levels of care, respectively. Central hospitals have neonatal intensive care units. Malawi has not introduced any new referral protocols for birth asphyxia to complement HBB. Asphyxia cases that do not respond to ambu bagging are either declared dead or are referred to higher centers of care. In such cases a health worker accompanies the patient and family providing positive pressure ventilation all the way to the referral center. The number of such cases is rare and generally has an associated complication such as prematurity. Health centers refer cases to the district hospitals and the latter refer cases to central hospitals, wherever possible. The provision of transport for referral patients is a barrier that at times prevents referral from taking place.

Conclusions—Implementation of the scale-up

1. **Implementation of the Scale-Up Plan**: HBB stakeholders in Malawi faced many challenges implementing the SUP. The MoH was unable to provide implementation equipment, training 30 providers in large districts resulted in inadequate coverage, and adequate district-level supervision of HBB requires major strengthening of the supervision system. Adjustments were made: partners pushed forward HBB training despite equipment shortages, training targets were increased in large districts, and the target date for implementing HBB in all districts was pushed back. The major question—and one that has no easy answer—is whether HBB training should have gone forward given the acknowledged problems with equipment provision. There is no correct response to this question, but the inability of the HBB program to provide equipment as planned is an implementation challenge that has negatively affected the program.

The challenges that have been faced implementing the SUP have two common issues at their root: the multi-partnered design of the scale-up and the lack of adequate resources to roll out HBB as planned. Without the benefit of a single major grant to fund the scale-up, the RHU and

its partners in Malawi have made a heroic effort to patch together inputs from various partners, district by district, to slowly move the rollout forward. The effort is admirable, and given the funding situation this approach may have been the only way to scale up HBB. However, the challenges that this approach brings to implementation, and its consequences for program effectiveness, must be recognized.

2. **Training—in-service, worksite, and pre-service**
   - **In-service training:** The conduct of the HBB IST is one of the most successful components of the HBB scale-up in Malawi. The HBB two-day educational module is well-suited to the Malawian context and using it in its original form has worked well. Health providers view HBB more as a reorganization of existing resuscitation practices with better equipment than as a new intervention or approach. The strategy of training a subset of providers and then having them train up their untrained coworkers does not appear to have been successful, and thus whether the HBB approach is followed may depend on the training status of the provider who attends the delivery.
   - **Worksite training:** The success of a scale-up effort will often depend on how effectively the target community has been engaged—and in the case of HBB, the key target community is the SBAs who deliver babies. Providers who participate in the formal HBB training are supposed to return to their worksite and then practice resuscitation techniques regularly on the NeoNatalie mannequin while engaging their coworkers as well. It does not appear that this activity is being implemented as envisioned; more support and structure will almost certainly be required from the supervision system. SBAs who were interviewed by the PD Team and who had not participated in the HBB training showed limited interest in participating in informal worksite-based training.
   - **Pre-service education (PSE):** Given that almost all SBA-attended deliveries in Malawi are conducted by nurse-midwives, incorporating HBB into the nursing-midwifery curriculum was a key step towards ensuring the long-term sustainability of HBB. While classroom teaching is important, the lack of effective opportunities for students to learn and practice the HBB protocol at clinical teaching sites is a major concern for the HBB program. Ensuring that the HBB approach is scrupulously adhered to at clinical training sites and ensuring that the practice of HBB is included as a required and scored skill should support progress in strengthening the teaching of HBB in PSE in Malawi.
3. **HBB equipment:** The provision of HBB equipment constituted one of the three objectives of the scale-up and is central to the overall HBB initiative. Given the MoH's inability to provide HBB equipment as it had originally committed, other partners took responsibility for procuring necessary equipment. Challenges included obtaining required funding as well as arranging for international purchase, as all HBB equipment is sourced from outside Malawi. It is demotivating for a provider to be trained to perform a skill using special equipment and then be told that the equipment they need is not available. Issues regarding the provision of equipment have threatened the implementation of the scale-up, its effectiveness, and its sustainability.
4. **Supervision:** 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 third HBB program objective is to strengthen systems to monitor maternal and newborn care, including birth asphyxia management. Given the status of health systems in less-developed countries, among the three HBB program objectives in Malawi—training, equipment, and supervision—the latter is arguably the most difficult to implement effectively. HBB stakeholders in Malawi agree that HBB supervision is not being implemented effectively at high coverage. While HBB has been integrated into MNH supervision tools, the reality is that SBAs currently are not being supervised effectively in HBB following the training.

5. **Monitoring:** The inclusion of an indicator of survival of asphyxiated newborns in the national HMIS represents a substantial accomplishment and is an important step in the integration of HBB into the routine government health system.

Program specialists face a choice with regards to monitoring when introducing a vertical intervention such as HBB. They want information that allows them to understand how HBB is performing, but the current HMIS usually offers little or no information that they can use. Programmers must therefore choose to either (1) introduce a parallel information system—outside of the HMIS—that generates the data that they want, or (2) to scale up without the benefit of monitoring data. Each approach has its advantages and disadvantages. If the choice is made to develop a parallel information system—and this is the choice that was made for HBB in Malawi—the advantages are that data may be available, under the control of the program, and the data collection activities should heighten the profile of the intervention. The disadvantages are that the data quality will almost certainly be low (health workers are not enthusiastic about collecting extra, unofficial data) and the data may be misinterpreted or used ineffectively.

The planned approach to monitoring the HBB initiative in Malawi is comprehensive but has not been implemented fully and seems to be overly ambitious (i.e., too heavy a work load). Much effort has been made to develop data collection tools and collect data but the quality of the data appears to be very low and monitoring reports are not being generated, suggesting that after an initial intensive effort to develop the monitoring system, its implementation and use have not received as much attention as other aspects of the HBB initiative. Use of the data to guide programming appears to be minimal. The late introduction of the HBB monitoring system—almost one year following the commencement of training—hints that the push to begin training quickly outpaced the implementation of other important components of the HBB initiative.

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 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, including funding mechanisms, and sustainability.

ASSESSING STATUS OF HBB IMPLEMENTATION IN MALAWI

Findings from the first round of data collection in the evaluation of the HBB initiative in Malawi

MCHIP and the Malawi MoH collaborated on an evaluation of the HBB initiative in Malawi.[15] The first round of data was collected in September 2012, one year after the initial district-level HBB trainings. The evaluation compares outcomes from the 13 intervention districts where HBB training had been conducted against outcomes in control districts where HBB training had not yet been conducted. The study found that health workers in intervention facilities achieved slightly higher skill scores[16] for clinical simulation of bag and mask ventilation and that intervention facilities had modestly greater availability of resuscitation equipment compared to control districts and facilities. Providers' adherence to HBB protocols while managing asphyxiated newborns (measured through observation of actual cases) was similar in both groups. Overall the evaluation found that for most outcomes no statistically significant difference was observed between intervention and control groups during the first year of the HBB rollout. Since data were not collected prior to commencing program activities, it is not clear if these findings represent a change from the baseline situation. Additional data were collected in September 2013 to assess the quality of resuscitation management during the second year of the rollout; results from this second round of data collection will be available by April 2014.

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 and/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, equipment, and supervision/mentoring. Vertical scale-up involves making progress in building the intervention into less quantifiable areas of the health system such as including HBB in policies, pre-service education curricula, monitoring systems, and financing. Progress through October 2013 in both aspects of the HBB scale-up is summarized in the Table 3.

[15] 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.

[16] The mean number of steps correctly completed while using the bag and mask using the NeoNatalie mannequin was 6.6 out of 10 in the intervention group and 6.1 in the control groups, $p < 0.001$.

Table 3. Status of horizontal and vertical components of the HBB scale-up

Component	Status through October 2013
Horizontal	
In-service training	Between 30–50 percent of SBAs trained in 26 of 28 districts through October 31, 2013. HBB will be introduced in the two remaining districts in 2014.
Equipment	Equipment arrived late in many districts with unclear effect on providers' performance of HBB. Training equipment has now been provided in all 26 districts where HBB has been introduced while implementation equipment has been provided in 24 of 26 districts where providers have been trained. It is not clear if equipment has been provided to high-volume delivery facilities in the planned amounts. The status of facilities that have received HBB equipment is tracked and recorded by the DHOs. The type of equipment provided through the HBB initiative is not available for internal procurement through the MoH's CMS, although older models of resuscitation equipment are available through CMS.
Supervision and mentoring	Some HBB intensive supervision conducted by national-level team in scattered facilities but very low coverage of effective supervision and mentoring of HBB at the facility level.
Vertical	
Policy	HBB incorporated into policy and strategies and included in relevant policy documents as they are periodically revised.
Pre-service education curricula	HBB included in PSE curricula for nurse-midwives but not for other cadres, including medical students.
HMIS	New indicator of effective resuscitation introduced into HMIS. Parallel information system for HBB designed and introduced, use and quality of data are low.
Financing	MoH has not provided dedicated funding for recurrent HBB expenses.

INTEGRATION OF HBB

The AAP developed the HBB intervention as a focused package in order to reduce high rates of neonatal mortality due to birth asphyxia. HBB is thus vertical by design although HBB materials do include other aspects of 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.

Introducing HBB vertically to maximize short-term impact: HBB stakeholders note that HBB has been incorporated into the curriculum for the three-week Integrated Maternal and Newborn Care In-service Training (IMNCT), but that it is preferable to train most providers in Malawi through the two-day HBB training for reasons that include the following: (1) given human resource constraints in Malawi, it is easier to remove a health worker from their position for two days than it is for three weeks; (2) the two-day training is much less expensive; and, (3) health providers can be trained much more quickly through a two-day training program, expanding the coverage of HBB rapidly and saving more newborn lives. The IMNCT is a 21-day training package and training providers on HBB using the full IMNCT package would have taken years to realize the geographic coverage that has been achieved through the vertical HBB training approach. Due to funding limitations there is no current plan for rolling out the IMNCT, although due to its modular design, components of the IMNCT package can be implemented by individual districts or facilities based on need.

Status of efforts to integrate HBB: The vertical, training-centered introduction of HBB in Malawi has been balanced by a variety of complementary efforts to integrate HBB into existing MNH systems. Table 4below describes the current status of the integration of HBB into key aspects of the health system in Malawi.

Table 4. Status of the integration of HBB into key aspects of the health system in Malawi

Integration	Status
Inclusion in government policy and strategic documents	▪ HBB has been adopted as official government policy and has (or will be) included in all relevant policy and strategic documents.
Integration of HBB in pre-service and in-service training	▪ HBB has been integrated into PSE for nurses and midwives. ▪ HBB has been integrated into the 21-day IMNCT training package. ▪ HBB is taught among peers under the CPD program. ▪ HBB has not been integrated into the PSE for cadres other than nurse-midwives.
Integration of HBB in monitoring and supervision	▪ HBB is part of the integrated supervision systems at national, zonal, and district levels. ▪ HBB is included in the supervision checklists used during integrated supervision visits. ▪ The HBB Register has been introduced into all facilities where a health provider has been trained in HBB. However, it has not been included in the government HMIS. ▪ An HBB indicator has been newly integrated into the government HMIS.
Integration of HBB into routine delivery services	▪ Most of the SBAs who have been trained in HBB are the main providers of delivery services in Malawi (in hospitals, SBAs may rotate through all of the services on a periodic basis), demonstrating the partial integration of HBB into routine delivery services.
Integration into procurement and logistic systems	▪ Ambu-bags and masks are included in the government procurement and supply system but the penguin suction device for clearing the newborn's airway is not.

SUSTAINABILITY OF HBB IN MALAWI

Although sustainability is a concept that has many aspects, no aspect is as important as sustainability of positive change. In the case of HBB, this translates to sustaining improved management of non-breathing newborns. As noted above, there is no evidence at this time that management of asphyxia has improved in Malawi following the scale-up of HBB.

Other aspects of the sustainability of HBB are intertwined with and supported by its integration into the MNH service framework and other aspects 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, education and training, monitoring and supervision, routine services, and procurement and logistic systems—contributes to (or detracts from) the long-term sustainability of HBB.

For HBB to be truly sustainable it will eventually need to be supported by dedicated, recurrent funding through the government budget. Given the nature of the HBB intervention, funding will thus be required for in-service training, provision of new and replacement equipment, and for general supervision. At this time, partners and donors fund HBB training and procure equipment, and while partners and government both support supervision, this latter activity is performed sporadically. Given the budgetary constraints faced by the MoH in Malawi, it is unclear when the government will be able to provide adequate funding to ensure the sustainability of HBB.

Conclusions—Institutionalization of HBB in Malawi

- **Implementation status of HBB through October 2013**: The first round of the HBB evaluation in Malawi found that there is no evidence that providers' performance of resuscitation management for newborns was higher in districts where HBB had been implemented compared to districts where it had not one year following the commencement of the rollout. This result mirrors a similar finding of no difference from the preliminary evaluation of the scale-up of HBB in Bangladesh[17] and 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.[18] A number of reasons can be postulated for the finding of no difference between intervention and control districts in Malawi. The two most plausible explanations for the result are (1) cross-group contamination (primarily due to transfer of providers) or (2) a lack of effect from the HBB intervention as implemented during its first year of activities. Given the challenges that have been faced while implementing the scale-up of HBB in Malawi as documented in this report—training only 30 providers (or 30 percent of providers) per district, late arrival of implementation equipment, and largely ineffective supervision and mentoring—the finding that the intervention has not resulted in improved outcomes during its first year is certainly plausible.

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 may 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; and, 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 influenced effectively 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."*
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> Senior nurse, Malawi

A summary assessment of horizontal and vertical components of the HBB scale-up reveals notable gains achieved under difficult circumstances but a current status that falls short of ideal. Between one-third and one-half of providers have been trained, equipment supply has been behind schedule, and meaningful supervision/mentoring of HBB does not appear to take place. Somewhat greater progress has been made with regards to vertical components of scale-up, although lack of government funding remains an impediment to full scale-up.

[17] A short preliminary report on System Evaluation of scaling-up of Helping Babies Breathe (HBB) intervention in facility and community settings in Bangladesh. Centre for Child and Adolescent Health, icddr,b. December 2013.
[18] 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.

- **Integration and sustainability**: The integration of a new intervention such as HBB into different components of the health system contributes to the intervention's long-term sustainability. In Malawi, there has been strong progress made in integrating HBB into policy, pre-service and in-service education and training, monitoring and supervision, and routine services. For an important intervention like HBB with potential for immediate impact, a vertical rollout supported by efforts to integrate the intervention within the health system is a sound approach—and this is what has been done in Malawi.

The key issue with regard to the sustainability of HBB in Malawi is whether or not it has improved the management of asphyxia among newborns—and, if impact has been achieved, how it can be sustained. Given the finding from the first round of the HBB evaluation that shows no difference in asphyxia management between intervention and control districts, one might ask what there is to sustain at this point of the scale-up. Sustaining process or systemic elements of the intervention makes little sense if impact is not being achieved.

It is unclear whether (and when) the MoH will be able to provide dedicated funding to support key activities that underpin HBB, such as equipment provision, district-level supervision, and IST. The provision of government funding dedicated to HBB would be an important aspect of long-term sustainability.

Recommendations

This report has described a well-planned initiative to improve the management of resuscitation of asphyxiated newborns through the scale-up of the HBB approach in Malawi. The scale-up has been commendably implemented in the face of multiple barriers. The most intensive inputs have been in the design and implementation of the national training effort and the provision of high-quality equipment to facilitate providers' performance of resuscitation. Additional inputs have been made in areas that include supervision, monitoring, and curriculum development.

HBB is clearly an intervention that will need continued nurturing and strengthening well past the first phase of the scale-up if it is to achieve the impact that it was designed for. While the PD of the HBB scale-up in Malawi that is described in this report was not intended to be an evaluation, the findings of the PD are important and provide a strong basis for developing and presenting recommendations to guide the next phase of the HBB scale-up.

The PD Team gathered information from multiple sources during its review of the HBB implementation process, including the results of the first phase of the HBB evaluation. Significant progress has been made while rolling out the HBB intervention to almost all districts in Malawi. However, the central finding from the first round of the HBB evaluation of no significant differences in resuscitation management between intervention and control districts is supported by this PD, which describes a rollout effort that has faced significant challenges. Taken together, findings from the evaluation and the PD 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 Malawi. The recommendations below reflect the views of stakeholders of the HBB scale-up and the Consultant regarding what the HBB program in Malawi should focus on in the near future.

OVERARCHING RECOMMENDATIONS

1. **Begin planning aggressively for Phase 2 of the HBB scale-up:** The initial phase of the HBB scale-up in Malawi has been completed. The MoH and its partners did a commendable job of developing a national scale-up plan for HBB. In retrospect, aspects of the original scale-up plan were not realistic and have not achieved the intended results. Much work remains to be done in order to consolidate the achievements of Phase 1 and strengthen program implementation in the core components of the HBB initiative, including in-service training and pre-service education, provision of equipment, continued mentoring, and worksite training. Now is the time to review and develop the plan for Phase 2 of the scale-up. Details regarding recommended actions are presented below.
2. **Identify partners and secure inputs for Phase 2 of the scale-up:** The HBB initiative will require substantial funding and additional partners for several years to come. The major current sources of funding for HBB are Johnson & Johnson and USAID (the latter through the SSDI project); both are scheduled to end within the next two or three years. The HBB program should identify new partners and sources of funding to support an ambitious plan to enhance the effectiveness of the HBB intervention during its second phase. It would be highly preferable for Phase 2 to be financed through a single, central source of funding rather than through a patchwork of project grants. If this is not feasible, or even with a central source of funding, the coordination of the HBB initiative should be strengthened and centralized. RHU/MoH and its partners should work closely with the zonal and district health offices to coordinate and support the rollout at the district level as described below.
3. **Institute a more centrally-coordinated management structure for the HBB initiative:** The HBB initiative in Malawi has been advanced through a fragmented partnership structure with many different partners and donors providing inputs for specific

districts or components of the program. The MoH and its district level offices (i.e., DHOs) have played a strong role leading the development of policy for HBB, but have not played as strong a role at the operational level. This needs to change. The MoH should work with leading partners to develop a formally recognized HBB Central Unit—probably based in the RHU—that works at the operational level to coordinate and direct HBB-related activities. This unit would be comprised of managers, not policy makers, and supported by a group of partners that are implementing the HBB initiative at ground-level, including management-level representatives from RHU, Save the Children, SSDI, and CHAM. It should be noted that RHU is a coordination unit and not an implementation unit.

The natural partners of the HBB Central Unit will be the DHOs. The HBB program should give the DHOs a significantly expanded role in HBB implementation during Phase 2 (as compared to their role during Phase 1) and prepare them adequately to carry it out.

4. **Define the government's future role in the HBB initiative:** The MoH should make a clear statement of its projected role during Phase 2 of the HBB initiative, both with regards to funding as well as coordination. The relative roles of the RHU and the Department of Clinical Services with regard to leadership and management of the HBB initiative should be clarified and managerial authority for the HBB initiative preferably should be assigned to one of the two entities. The sustainability of HBB will be strengthened notably if the MoH commits funds to recurrent costs for its implementation. Partners should work with the MoH to develop a mechanism for the government to gradually take responsibility for recurring program costs.
5. **Model a strengthened approach to district-level rollout of HBB:** The MoH will roll out HBB in the two remaining districts (Mchinji and Likoma) where HBB has not yet been introduced in 2014 with support from Save the Children and Management Sciences for Health. The rollout in these two districts should build on lessons learned from the scale-up to date and address some of the shortfalls of the HBB rollout that have occurred in other districts. The strengthened approach should include the objective of training all providers of delivery services in the districts through a phased approach, with provision made for training providers who are currently not providing delivery services but who may rotate into delivery services in the future. Adequate training and implementation equipment should be procured and made available to the two districts prior to initiation of the rollout.

COMPONENT-SPECIFIC RECOMMENDATIONS

1. **Define a target "state of implementation" at the district level and a plan to achieve it:** The bottom line for a desired state of implementation of HBB will be for the majority of non-breathing newborns to be resuscitated. In order for this to happen, key aspects of the health services must achieve readiness to provide services according to HBB protocols and providers must then take the next step and follow the HBB approach faithfully. All districts are well short of ideal implementation readiness status for one or more field-level components of the HBB scale-up, including training status of providers, availability of equipment, mentoring and worksite training, supervision, and monitoring. The HBB program should define what it wants the readiness status of all districts to be by a specific future date and then make plans and secure funding in order to reach its goal. The goal should include having a service provider with HBB skills and adequate resuscitation equipment present at every birth that occurs at a health facility in Malawi. This would require having every service provider who attends childbirth trained in HBB and every facility stocked with necessary resuscitation equipment. Recommendations for the ideal implementation goal for each component follow below.

2. **Develop a funded plan to train all facility-based SBAs by a specified date:** One objective of the HBB initiative must be to provide formal HBB IST to all SBAs working in delivery facilities at the earliest possible date. While the HBB program provided IST to approximately 30 percent of facility-based SBAs during Phase 1, that was an interim measure, and not one that will result in the HBB initiative achieving maximum impact. A full set of both training and implementation HBB equipment *must* be in place before further IST activities commence during Phase 2.

3. **Secure funding to fully equip all delivery facilities in Malawi with complete sets of training and implementation equipment:** The amount of funding required to provide full sets of equipment to all facilities is too low a percentage of the overall cost of the HBB initiative to allow the lack of equipment to continue to exert a negative effect on the program. The MoH and its partners must move immediately to rectify the equipment gap and fully equip all delivery facilities with both training and implementation equipment. This will most likely require one of the donor partners to step up and provide a grant for a block purchase as soon as possible. No further IST should be conducted until the facilities that IST participants provide services in are fully supplied with training and implementation HBB equipment.

   The MoH should simultaneously move quickly to agree on a list of basic resuscitation equipment of adequate quality to include on the essential commodity list and make it available through the CMS for procurement by facilities. CMS could stock the Laerdal brand of equipment that has been supplied during the HBB rollout or an appropriate alternative. The NeoNatalie mannequin has an average life of three years and other resuscitation equipment will need to be replaced periodically. The MoH and its partners must ensure the ongoing availability of resuscitation equipment to support the sustainability of the HBB initiative.

4. **Develop and field-test approaches to supervision, learning at worksites, and mentoring**: Supervision, mentoring, and worksite training and practice are distinct yet overlapping elements of the HBB initiative and have arguably been the weakest components of the HBB scale-up in Malawi. The proof is in the details; most facilities are neither making frequent nor effective use of the NeoNatalie mannequin while most providers in community health facilities receive little or no supervision in HBB. Among SBAs who participate in the HBB IST and then receive no further guidance immediately post-training through mentoring or practice at worksites, most will not practice newborn resuscitation effectively. Developing an effective approach to learning at worksites and mentoring for HBB may well be the most difficult yet most important task to pursue in Phase 2 of the scale-up. Serious attention should be given to institutionalizing regular practice on the NeoNatalie mannequin (in pairs, as is done during the HBB training).

   The HBB program should develop and test several approaches for mentoring and facility-based maintenance of competency in order to learn more about what works and what doesn't work in the Malawian context. The current MoH/SSDI mentoring approach, which includes HBB, should be among the options that are assessed. This component of programming cannot be left to the routine government supervisory system if HBB is to succeed; extraordinary efforts are called for here. The program should consider approaches that are sustainable as well as those that require resources from outside the system and that may be vertical and unsustainable in nature. Partners will need to invest significant resources in this component if HBB is to achieve its intended impact. The HBB program may want to explore what role, if any, mHealth could play in improving supervision and mentoring. The role of professional bodies such as the Nurses and Midwives Council of Malawi and other medical associations should be explored.

5. **Develop a strategy for collecting limited monitoring data of acceptable accuracy and report results on a regular basis:** The current approach to monitoring HBB in Malawi is not working effectively. Most of the HBB monitoring data at the facility level that were reviewed by the Consultant were either incomplete or inaccurate. Data do not appear to be regularly reported nor used effectively for decision making. The monitoring component of the HBB needs to be redesigned and strengthened. This will be a major task and it is beyond the scope of this report to provide specific recommendations regarding how it should be undertaken. Some observations and suggestions that may guide the redesign effort are presented below.

   If the HBB program is going to require all health facilities to collect data through the HBB Register and then report them, then the program must provide support to ensure a reasonable level of data quality and then analyze and report data from all facilities and use the data for program management. If this cannot be achieved then the program should change its approach to monitoring. Options for a revised approach to HBB monitoring that might be considered include one or more of the following:

1. Collecting HBB data through a surveillance approach from selected facilities (and not collecting it from facilities outside of the surveillance system)
2. Incorporating one or two key indicators that describe resuscitation into the permanent HMIS and measure them through established data collection mechanisms, such as the maternity register (while dropping the use of the HBB Register)
3. Making use of the HBB Register voluntary and providing support to facilities to collect and analyze the data at facility level

Regardless of which option(s) are pursued, there is an urgent need to generate data regarding HBB processes and outcomes that are reasonably accurate and then report and use them to guide program management. The recent inclusion of an indicator of survival of asphyxiated newborns in the national HMIS represents a notable achievement for the HBB program. Additional thought needs to be given to what kind of outcomes can be accurately measured through monitoring and what kind of information is actionable by program managers. Some experts advocate monitoring stillbirths, disaggregated by fresh/macerated, as well as very early neonatal deaths (i.e., within the first 12 or 24 hours following delivery). These indicators can be tracked at the facility level and higher, at least on a quarterly basis, and benchmarked against other facilities of the same type. Some of this information is available through the routine HMIS in Malawi and the HBB program should explore the possibility of tracking this information as an indicator of program performance.

Development of a surveillance system for HBB is worthy of consideration. This approach would focus on collecting high(er)-quality data from a nationally-representative set of facilities that could be provided with more intensive support for collecting and reporting data. A strategy would need to be developed to maintain the representativeness of these facilities given the amount of scrutiny and support that they would receive. These data could be systematically analyzed and reported and then used to guide program management.

1. **Pre-service education:** The HBB program has made initial steps to integrate HBB into PSE of nurses and midwives. Further efforts are urgently required to integrate HBB into the curriculum for other cadres that are trained to be SBAs. The HBB program should assess the quality of HBB education during the various stages in the PSE process and determine which stages need to be strengthened in order to produce providers that can practice HBB effectively. Based on the assessment findings, action should be taken to support strengthening of PSE as required.

The present lack of adequate emphasis on developing HBB skills at clinical practice sites clearly needs attention. While it may not be realistic for students to practice resuscitation during clinical practicum—resuscitation is not a routine service, and asphyxiated newborns will most likely be managed by more experienced providers—HBB encompasses more than resuscitation, and there is no reason that having students follow the HBB protocols for normal deliveries cannot become standard procedure during clinical training. A recent assessment of the HBB component of PSE for nurses, conducted by Stanley,[19] provides a comprehensive set of conclusions and recommendations to guide this effort. Strengthening the effectiveness of HBB education in PSE should be an integral part of any future national plan developed to strengthen HBB and newborn health.

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

Annex 1: Overarching Observations and Lessons Learned

The text below presents overarching observations and lessons learned, framed on a model of determinants of successful scale-up efforts as proposed by Yamey.[20]

CHARACTERISTICS OF THE INTERVENTION

- **Simplicity of the intervention:** The simpler the intervention, the easier it is to scale up successfully. Stakeholders in Malawi consider HBB to be a relatively simple intervention and feel that this has facilitated its rapid roll-out. The characteristics of the HBB training—carefully structured, competency-based, following adult learning principles—also assist the roll out, making it easy to facilitate and interesting. The simplicity of the HBB intervention contrasts sharply with the complexity of rolling it out effectively. The multiple systemic components of the HBB rollout that must be considered transform a relatively simple intervention into a complex and challenging scale-up exercise.
- **Technically robust intervention:** Ensuring that interventions are grounded in evidence—and are perceived to be so—supports a successful rollout. The AAP is viewed as a highly credible organization in Malawi and its role in developing the HBB intervention contributes to the perceived integrity of HBB. Professor George Little, a representative from the AAP, visited Malawi several times during the formative stage of the scale-up and provided inputs regarding technical aspects of HBB. A stakeholders meeting was used to build widespread consensus among the public health community in Malawi regarding the need to improve resuscitation management and the evidence supporting HBB as a viable, effective response. The Secretary of Health, Dr. Charles Mwansambo, vocally supported HBB as an appropriate, evidence-based response to a pressing national problem.

CHARACTERISTICS OF THE IMPLEMENTERS OF THE SCALE-UP

- **Strong** leadership: Scale-up efforts require dedicated leadership to address the barriers that inevitably arise. The HBB scale-up benefitted from strong government leadership and a core group of dedicated champions from both government and non-government agencies. Ms. Fannie Kachale, the Director of the Reproductive Health Directorate of the MoH, provides the driving leadership for the HBB initiative. Her participation in the initial HBB Master Training in Addis Ababa was crucial and positioned her to become a leading champion for HBB in Malawi. Having the MoH take the lead in moving HBB forward has been crucial to maintaining the momentum of the scale-up.
- **Engagement of local stakeholders:** The engagement of local stakeholders is an important strategy to gain allies in scale-up efforts and avoid unnecessary opposition to the intervention. In the case of the HBB scale-up in Malawi, all relevant local stakeholders, including representatives of the professional medical organizations, were involved from the earliest stages of planning for the scale-up. Locally generated data from the EmONC study were used to make the case for action. The HBB Team in Malawi considers relationships with the stakeholder community to be a strong component of the scale-up effort.

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

- **Government and nongovernmental organizations working as co-implementers:** Government and nongovernmental 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 Malawi, where the two parties worked together effectively, with the government providing overall leadership and a service delivery framework while the non-governmental actors supported the government with intensive efforts in implementation.

DELIVERY STRATEGIES

- **Phased scale-up models:** The literature suggests that scale-up models that build on a pilot program or learning phase and are then rolled out in a sequenced approach have an increased probability of achieving success. HBB in Malawi was taken to scale without the guidance that a pilot might have provided but has been rolled out in a phased manner, with the structure of the phases dictated by funding cycles of projects that supported the rollout. 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 the lessons that a pilot might have taught. Given the many challenges that the HBB scale-up in Malawi has faced, and the results from the first round of the HBB evaluation, it may have been useful to introduce HBB initially through a learning phase in a selected number of districts and only then proceed to a full rollout.
- **Freedom to adapt the intervention model based on the local context:** Yamey suggests that granting local implementers the freedom to modify the intervention model increases the chances for a successful scale-up. The AAP encourages countries to propose modifications to the HBB model based on country context but reserves the right to not approve them. In the case of Malawi, HBB program leaders felt that there was no need to tailor the HBB package for local use as HBB is quite similar to the resuscitation procedures that were in place prior to HBB.
- **Integrating scale-up activities into existing health systems:** While many scale-up efforts are vertical in nature—often out of necessity—the value of simultaneously integrating the intervention into the existing health system is widely acknowledged. As described in Section 15 of this report, the HBB Team in Malawi has introduced HBB vertically while preparing an integrated foundation within the Malawian health system to strengthen its mid- and long-term effectiveness. This combination of vertical and integrated approaches appears to be an appropriate compromise as the HBB program attempts to achieve an immediate impact on newborn mortality while ensuring the future viability of HBB.

CHARACTERISTICS OF THE ADOPTING COMMUNITY

- **Engagement of health providers and administrators:** 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 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. The key health system levels where this engagement must take place are the district and facility levels.

The HBB initiative in Malawi engages the DHMT prior to beginning activities in a new district through a process described in Section 8 of this report. HBB program managers feel that this process is successful in fostering a team approach between the partner and the DHO for subsequent HBB activities. Engaging health providers is as, or more important, than engaging administrators. The HBB program requires HBB-trained providers to return to their health facilities and informally train their (untrained) colleagues. Providers interviewed by the PD

Team who were informally trained in this manner were not enthusiastic about this approach and stated that they would prefer to attend a formal training.

Health workers and officials in Malawi understand well that resuscitation skills are important and that—with proper skills—they can help asphyxiated babies breathe. However, the manner in which the HBB initiative engages them will determine the way that they understand and perceive HBB and their attitudes towards its implementation.

SOCIO-POLITICAL CONTEXT

- **Country ownership and political will:** Country ownership and policy commitment (political will) are recognized as factors that contribute to the success of scale-up efforts. Country ownership is most effectively fostered when the host country firmly controls the policy and programming agendas and is not dictated to by partners or donors. This describes the situation in Malawi, where the MoH has a positive and productive relationship with donors. The government's Health Sector Strategic Plan (HSSP) frames the relationship; the MoH welcomes donors that provide resources to support the HSSP but discourages funding outside of the HSSP. The HBB initiative in Malawi grew out of a shared learning experience at the HBB Master Training of Trainers organized by MCHIP in Addis Ababa in 2011. Representatives from government and partner organizations participated in the HBB Master Training and decided together to move forward with HBB. There is considerable political will behind HBB in the Malawi MoH although this has not translated into substantial funding support.

RESEARCH AND IMPLEMENTATION

- **Incorporating operations research into implementation:** Researchers have noted the link between successful scale-up and conducting ongoing operations research during the scale-up to guide the rollout process. This requires program specialists to be open to research findings that suggest that the scale-up has weaknesses and be able and willing to redesign the intervention based on evaluation findings. The conduct of the HBB evaluation in Malawi certainly qualifies as ongoing program research during scale-up, and the process documentation has generated actionable findings as well. The MoH and its implementation partners will need to review findings from the HBB process documentation and evaluation and make some hard decisions regarding how to resolve the challenges that have been identified in order to strengthen the implementation of HBB and ensure that all providers have the skills and equipment that they need to successfully resuscitate the majority of asphyxiated babies.