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A Health System Bottleneck Analysis of Care and Feeding of Small and Sick Newborns in Malawi: Findings and Considerations for Nutrition- Newborn Integration

Final Report

Authors:

Patricia R. Welch, Justine A. Kavle, Florence Bwanali, Kanji
Nyambo, & Neena Khadka



The Maternal and Child Survival Program (MCSP) is the U.S. Agency for International Development's Bureau for Global Health flagship program for preventing maternal and child deaths, focusing on 25 countries. The program introduces and supports high-impact, sustainable reproductive, maternal, newborn and child health (RMNCH) interventions in partnership with ministries of health and other partners. This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID), under the terms of the Cooperative Agreement AID-OAA-A-14-00028. The contents are the responsibility of the Maternal and Child Survival Program (MCSP) and do not necessarily reflect the views of USAID or the United States Government.

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Abbreviations

BFHI	Baby-Friendly Hospital Initiative
CCG	community care group
DHS	Demographic & Health Survey
EBF	exclusive breastfeeding
ECSB	Essential Care for Small Babies
ENAP	Every Newborn Action Plan
HMIS	Health Management Information System
HSA	health surveillance assistant
IV	intravenous
KMC	Kangaroo Mother Care
LBW	low birthweight
MCSP	Maternal and Child Survival Program
MOH	Ministry of Health
NGO	non-governmental organization
NGT	nasogastric tube
NICU	neonatal intensive care unit
PACHA	Pediatric and Child Health Association of Malawi
PMTCT	prevention of mother-to-child transmission of HIV
PNC	postnatal care
SSNB	small and sick newborn
TWG	technical working group
WHO	World Health Organization

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Introduction

Despite global evidence demonstrating the health benefits of breastfeeding, only 41% of children under the age of six months are exclusively breastfed (WHO, UNICEF, & Global Breastfeeding Collective, 2018). Prematurity, a common cause of low birthweight (LBW) and newborn illness, accounts for 40% of all newborn deaths globally (WHO, 2012). These LBW and sick babies typically require specialized care – including warmth care, infection control, and alternative feeding methods of breast milk, such as via cup, spoon, or nasogastric tube – but often do not receive adequate care and breastfeeding support in low- and middle-income countries. The Baby-Friendly Hospital Initiative (BFHI) – launched by the World Health Organization (WHO) and UNICEF in 1991 and based on the Ten Steps to Successful Breastfeeding (the Ten Steps) – aims to ensure mothers are supported to establish early, exclusive, and continued breastfeeding through promoting the strengthening of infant feeding policies in maternity facilities and may provide a platform for strengthening care and feeding of the sick and/or small newborn (WHO & UNICEF, 1989). When initially launched, the BFHI was intended to focus mainly on healthy, term infants. However, revised BFHI implementation guidance released in 2018 includes LBW and preterm infants as target populations, in addition to healthy, term infants (WHO & UNICEF, 2018).

In Malawi, while 61% of babies under six months of age are exclusively breastfed and 76% of infants are breastfed within one hour of birth, much progress is needed in infant feeding to support improvements in the country’s high neonatal mortality ratio of 27 deaths per 1000 live births (National Statistical Office Malawi & ICF Macro, 2017). The first Malawi Demographic Health Survey (DHS), conducted in 1992, revealed an exclusive breastfeeding (EBF) rate of 3%, encouraging the Malawi Ministry of Health (MOH) to make a commitment to improve breastfeeding policies through the adoption of BFHI (National Statistical Office Malawi & Macro International, 1994). It was launched in Malawi in 1993, and 26 hospitals became certified as Baby-Friendly, having successfully implemented the Ten Steps. Significant progress was made in breastfeeding practices, as demonstrated by improvements in exclusive EBF rates shown in both the 2000 DHS and 2010 DHS – 45% and 71%, respectively (National Statistical Office Malawi & IFC Macro, 2001; National Statistical Office Malawi & IFC Macro, 2011). However, due to funding losses for BFHI in 2004 and with minimal monitoring and supportive supervision mechanisms in place, BFHI languished in Malawi. Additionally, confusion among health providers around infant feeding recommendations for HIV-positive mothers led to further decline in adherence to the Ten Steps. This was partly attributed to by the delay in updating of national guidelines to reflect global guidance from WHO recommendations around prevention of mother-to-child transmission of HIV (PMTCT) released in 2006 and revised in 2009 (WHO, 2010; WHO et al., 2010). The effects of these challenges were shown in the 2015/16 DHS, which revealed an EBF rate of 61% (National Statistical Office Malawi & ICF Macro, 2017).

Quick Facts: Malawi	
Exclusive breastfeeding rate	61%
Rate of preterm births	18/100 births
Neonatal mortality	27/1000 births
Infant mortality	42/1000 births
Under-5 mortality	63/1000 births
Births that take place in a health facility	91%
Mothers who receive antenatal care	95%

With Malawi having the highest rate of preterm births in the world at 18 per 100 live births, significant focus is needed around improving care and feeding of the small and sick newborn (SSNB) (WHO, 2012). Malawi has also seen significant gains in newborn health in recent years. From 2000 to 2016, the proportion of

mothers who gave birth with a skilled birth attendant dramatically increased from 56% to 90%. In the same time frame, the neonatal mortality rate fell by 34% — from 41 per 1000 live births to 27 per 1000 live births (National Statistical Office Malawi & IFC Macro, 2001; National Statistical Office Malawi & ICF Macro, 2017). During this period, the Government of Malawi made several policy commitments to improving maternal, newborn, and child health and nutrition, including developing the National Road Map for Maternal and Newborn Mortality Reduction (Zimba et al., 2012). The initial focus around reducing newborn deaths was on the health facility level, including through introducing and scaling up Kangaroo Mother Care (KMC) across all districts in Malawi and incorporating KMC and essential newborn care into pre-service training at nursing and midwifery teaching institutions. With the launch of the Community-based Maternal and Newborn Care package, the MOH worked to improve linkages from the facility to the community to reduce newborn deaths. Despite these improvements, neonatal mortality and the preterm birth rates in Malawi remain high and further work around improving care and feeding of the SSNB is needed.

In 2015, WHO-AFRO with the Malawi MOH developed a concept note to revitalize BFHI for a future USAID-funded project. This work was subsequently implemented through the awarded USAID-funded Maternal and Child Survival Program (MCSP). From February 2016 to March 2018, MCSP supported the Malawi MOH in the revitalization and scale-up of BFHI, based on the 2009 BFHI guidance, with the goal of improving breastfeeding practices and child survival (Kavle et al., 2019). With technical support from MCSP, conducted the training of clinical and support staff in 54 health facilities across all 28 districts of Malawi. While the trainings are just one component of scaling up BFHI, this resulted in three health facilities receiving Baby-friendly designation, through demonstrating their adherence to (the Ten Steps). At the time of this assessment, an additional two health facilities were awaiting Baby-friendly designation, following successful external assessments. Most facilities trained made significant improvements in their infant feeding programs, however, require further mentoring, coaching, and monitoring around adhering to the Ten Steps to prepare for a successful external assessment. Areas that require further strengthening were discussed with the MOH and USAID.

In anticipation of the WHO and UNICEF 2018 revised BFHI guidance, MCSP supported the MOH in integrating training on Essential Care for Small Babies (ECSB) (American Academy of Pediatrics, 2014) into the BFHI platform to strengthen care and feeding of SSNBs and conducted a bottleneck analysis. From December 2017 to January 2018, a training of 118 clinical staff – including nurses, nurse midwives, clinicians, and clinical supervisors – from eight health facilities previously trained on BFHI took place (see Table 1). These facilities did not include any that previously received Baby-Friendly designation. Health facilities participating in the bottleneck analyses were selected based on the following inclusion criteria: 1) they provide of essential care to SSNBs, including KMC, infection control, and feeding support; and 2) they previously underwent the BFHI training.

The two-day, on-site trainings on ECSB included group discussions, presentations, and small-group skills demonstrations using baby mannequins. The package of interventions for ECSB are shown in Figure 1.

Figure 1. ECSB training package of interventions

- How to recognize when a baby is sick
- How to recognize when a baby is born low birth weight (LBW)
- KMC
- Proper breastfeeding positioning and attachment
- Hand expression of breast milk
- How to adequately feed the sick or small newborn who is unable to suckle properly, including with expressed breast milk by cup or by nasogastric tube (NGT)
- Essential newborn care for the sick and/or small baby, including cord care, assessing for signs of infection, and understanding when to refer to a higher level of care

Participants were tested pre- and post-test and demonstrated improved levels of knowledge and understanding on the skills and information provided in the trainings.

Table 1. Malawian health facilities that underwent ECSB training from December 2017- January 2018

Hospital	District	Level of Care Provided	Provides Specialized Care for Small and Sick Babies (Y/N)	Provides Specialized Maternal Antenatal and Postnatal Care (Y/N)
Balaka District Hospital	Balaka	Secondary	Y	Y
Bwaila Hospital	Lilongwe	Secondary	Y	Y
Dowa District Hospital	Dowa	Secondary	Y	Y
Kamuzu Central Hospital	Lilongwe	Tertiary	Y	Y
Kasungu District Hospital	Kasungu	Secondary	Y	Y
Likuni Hospital	Lilongwe	Secondary	Y	Y
Nkhoma Mission Hospital	Lilongwe	Secondary	Y	Y
Salima District Hospital	Salima	Secondary	Y	Y

Following these trainings, a bottleneck analysis was conducted to better understand the policies and practices that impact care and feeding of SSNBs in Malawi at the health system level and at the eight health facilities that underwent training on ECSB (see Figure 2). Bottleneck analysis activities were conducted at these eight facilities and through interviews with key MOH staff in March 2018. Of these facilities – one is a tertiary care facility and seven are secondary care facilities – and all have the capability to routinely provide specialized newborn care to the SSNB as well as care for mothers that experience complications perinatally. They are all facilities with high-volume maternity wards, ranging from 350 to 900 deliveries per month, an average number of maternity ward beds of 60, and between 10 and 70 nursery/neonatal intensive care unit (NICU) beds.

Figure 2. Timeline of training around the small and sick newborn and bottleneck analysis at Malawian health facilities



This report details the key bottlenecks to the provision of care and feeding of the SSNB as well as proposed solutions. BFHI could provide an existing platform to implement proposed solutions presented here. While Malawi’s BFHI training package includes education around feeding the SSNB, this content is minimal, with most of its emphasis on the healthy, full-term infant, and is based on 2009 BFHI guidance. Revised BFHI guidance was later released in 2018 with an increased emphasis on ensuring optimal care and feeding of LBW and preterm infants (WHO & UNICEF, 2009; WHO, UNICEF, & Global Breastfeeding Collective, 2018).

However, gaps in the BFHI guidance around care and feeding of this vulnerable population persist. One model to address these gaps that has been implemented in upper-middle-income and high-income countries and is referred to in the 2018 WHO BFHI guidance is the Neo-BFHI (Nykqvist et al., 2015). The Neo-BFHI provides expanded BFHI guidance to support breastfeeding among SSNBs in neonatal wards and utilizes an adapted Ten Steps for this target population (see Table 2), which currently remain in line with the Ten Steps from the 2009 BFHI guidance. The Neo-BFHI is based upon the three guiding principles: 1) Staff attitudes toward the mother must focus on the individual mother and her situation; 2) The facility must provide family-centered care, supported by the environment; and 3) The health care system must ensure continuity of care from pregnancy to after the infant’s discharge. The proposed solutions outlined in this report discuss through which BFHI/Neo-BFHI step and/or guiding principle the corresponding bottleneck(s) could be addressed.

1	Have a written breastfeeding policy that is routinely communicated to all health care staff
2	Educate and train all staff in the specific knowledge and skills necessary to implement this policy
3	Inform hospitalized pregnant women at risk for preterm delivery or birth of a sick infant about the benefits of breastfeeding and the management of lactation and breastfeeding
4	Encourage early, continuous, and prolonged mother-infant skin-to-skin contact/KMC
5	Show mothers how to initiate and maintain lactation and establish early breastfeeding with infant stability as the only criterion
6	Give newborn infants no food or drink other than breast milk, unless medically indicated
7	Enable mothers and infants to remain together 24 hours a day
8	Encourage demand breastfeeding or, when needed, semi-demand feeding as a transitional strategy for preterm and sick infants
9	Use alternatives to bottle feeding at least until breastfeeding is well established, and use pacifiers and nipple shields only for justifiable reasons
10	Prepare parents for continued breastfeeding and ensure access to support services/groups after hospital discharge

Objectives

The objectives of this bottleneck analysis are:

1. To diagnose bottlenecks at the health facility and health system levels in the provision of care and feeding of the SSNB
2. To explore key enablers at the health facility and health system levels in the provision of care for the SSNB
3. To provide recommendations on key actions to address the identified bottlenecks

Methodology

The Every Newborn Action Plan (ENAP) bottleneck analysis tool, which is used to assess barriers and identify solutions to scale-up newborn care within the health system, (Healthy Newborn Network, 2013) was adapted (see Appendix II) and applied to the BFHI platform. Changes to the tool provided increased focus on care and feeding of the SSNB and modified core components pertaining to the health workforce and

health service delivery to investigate bottlenecks at the health facility level, in addition to the broader health system.

We assessed bottlenecks in the following six ENAP health system building blocks:

1. Policy, Leadership, and Guidance
2. Health Workforce
3. Essential Medical Products and Technologies
4. Health Service Delivery
5. Health Information Systems
6. Family and Community Engagement

MCSP conducted facility-based observations and interviews with key clinical¹ and supervisory staff² at each of the eight health facilities that underwent the ECSB training to gain qualitative data for assessing bottlenecks at the facility level. To identify health system bottlenecks, interviews were conducted with key district- and national-level MOH personnel. Additionally, health systems information was gathered from the Malawi Every Newborn Action Plan and the Malawi Child Health Strategy to extract key policy-related information. Information collected from interviews and extracted from national policies and guidelines were collated and analyzed for the presence/absence of significant bottlenecks. While interviews were conducted with health facility staff and MOH officials, no identifying information was collected (i.e. names, addresses). Ethical review board approval was not sought for this analysis, as the information was used to inform and strengthen program implementation for BFHI.



Photo credit: Guido Dingemans/Jhpiego

Results

A summary of key bottlenecks found to significantly impede the provision of adequate care to SSNBs, as well as proposed solutions and corresponding steps and guiding principles from the Neo-BFHI and revised 2018 BFHI/Ten Steps, are outlined in Table 3. These bottlenecks and facilitating factors are discussed in further depth below, within the context of the six health system building blocks in the adapted ENAP bottleneck analysis tool.

¹ Nurse Midwives and Nursing Officers

² District Health Officers, Maternity Ward In-Charges, and Supervisor Nursing Officers

Table 3. Summary of bottlenecks and solutions for improving care of the small and sick newborn in eight Malawian health facilities, March 2018

Health system building block	Bottleneck	Hospitals with bottleneck	Solution	Corresponding BFHI and Neo-BFHI step(s) and/or Neo-BFHI guiding principle
I. Policy, Leadership, & Guidance	Understaffed in newborn health at the national level within the MOH	*	Advocate for increased funding to allow for more support at the national level of MOH	N/A
2. Health Workforce	No national policies in place to ensure monitoring of care of the small and sick newborn (SSNB)	*	Incorporate monitoring of care of the SSNB	BFHI step 1c
	No job aids and/or protocols in the maternity ward for caring for, and monitoring SSNBs	8	Development and distribution of job aids and protocols on assessing, caring for, and monitoring SSNBs	BFHI/Neo-BFHI step 1
	No supportive supervision protocols or guidelines around care of the SSNB	8	Development of national-level supportive supervision protocols around care of the SSNB	BFHI/Neo-BFHI step 2
	No review of competencies of cadres who provide care to SSNBs	8	Development and training around core competency reviews around care of the SSNB	BFHI/Neo-BFHI step 2
	Lack of skilled staff trained to provide adequate care of the SSNB	6	Strengthening of pre-service training; Regular in-service trainings and on-site mentoring	BFHI/Neo-BFHI step 2
	Understaffing in maternity wards	8	Task shifting to various cadres, including support staff	BFHI/Neo-BFHI steps 3, 4, 5, 6, 8, 10
3. Essential Medical Products and Technologies	Lack of feeding cups	7	Incorporation of feeding cups into the national ordering system for essential medical products	N/A
	Inadequate or lack of heaters and incubators in the nursery	8	Advocacy for increased investments from government and donors	N/A
4. Health Service Delivery	Limited space in the maternity ward	8	Advocacy for government and donors for funding increased structural capacity	Neo-BFHI guiding principle 2
	Limited health facilities that provide care for SSNBs	*	Investment in increasing capacity of select rural health facilities	N/A
	Understaffing of maternity ward	8	Task shifting to support staff	BFHI/Neo-BFHI steps 3, 4, 5, 6, 8, 10
5. Health Information Systems	HMIS does not track EBF, skin-to-skin within 1 hour of birth, percentage of mothers who receive counseling on breastfeeding prior to discharge	*	Incorporation of these indicators into the HMIS and internal monitoring plans; prioritization of early breastfeeding initiation within national nutrition policies	BFHI step 1c
	Lack of national monitoring of Baby-Friendly designation	*	Incorporation of % of births in Baby-Friendly facilities into the Malawi ENAP	N/A

6. Family and Community Engagement	Lack of male engagement	8	Development of programs that aim to increase male engagement	Neo-BFHI guiding principle 2
	Sociocultural barriers to specialized care, including oxygen therapy and NGT feeds	8	Improvement of providers' counselling skills around the need for these therapies	Neo-BFHI guiding principle 1
	Lack of linkages from the facility to community levels	8	Training of CCGs on select aspects of care and feeding of the SSNB	Neo-BFHI guiding principle 3; step 10

*Bottleneck at national health system level, rather than at a specific health facility

I. Policy, leadership, and guidance

A significant bottleneck is the inadequate guidance in national nutrition and child health policies and strategies around BFHI, breastfeeding, and feeding of the SSNB. While the Malawi National Multi-Sector Nutrition Policy 2018-2022 prioritizes EBF as a key nutrition intervention, it does not prioritize early initiation of breastfeeding, BFHI, improving infant feeding practices among small and sick babies (Malawi Department of Nutrition, HIV and AIDS, 2018). Recommended practices for early initiation of breastfeeding (<30 minutes of birth), exclusive breastfeeding for 6 months, and promotion of BFHI, with considerations for feeding the LBW infant are included in the Infant and Young Child Feeding (IYCF) Guidelines for Malawi; however, the Malawi National Multi-Sector Nutrition Policy 2018-2022 and the Malawi Every Newborn Action Plan currently do not link to or reference the IYCF Guidelines for Malawi. (Malawi MOH, 2018).

The Malawi Child Health Strategy prioritizes improving care for SSNBs at the community and health facility levels (Malawi MOH, 2013). Gaps in this strategy pertaining to SSNBs include no mention of BFHI, lack of focus around improving providers' counseling skills around breastfeeding, lack of a clear pathway for collecting data on key nutrition and newborn indicators, including EBF and early initiation of breastfeeding within 1 hour of birth. The strategy has many strengths pertaining to feeding and care of the SSNB, including prioritization of the following:

- Reducing newborn deaths
- Improving feeding and care of the SSNB
- Early initiation of breastfeeding within one hour of birth
- EBF
- Essential Newborn Care, which includes cleanliness, infection prevention, thermal care, and antibiotic therapy for sepsis
- Integration of counseling on early and exclusive breastfeeding as part of antenatal care
- PMTCT
- KMC
- Supportive supervision at the community and facility levels around feeding and care of the SSNB

The Malawi ENAP recognizes care and feeding of the SSNB as a priority for the country (Malawi MOH, 2015).

- This strategy document identifies reducing neonatal deaths and improving newborn health as key areas needing attention. It includes priority interventions with key actions for newborn health around care for the SSNB in maternity facilities, along with KMC, weighing newborns and recognizing when a baby is born with LBW, proper hygiene, provision of intravenous (IV) fluids, safe oxygen use, prevention and management of infections, use of incubators and heaters for premature babies in the nursery, recognition of danger signs and care seeking, chlorhexidine for cord care, early initiation of and exclusive breastfeeding, and alternative feeding methods – made up of cup feeds and NGT feeds using breast milk expressed by hand.
- For home-based care, the Malawi Every Newborn Action Plan national strategy sets recommendations for Health Surveillance Assistants (HSAs) to provide the following care for newborns: measuring weight, general hygiene, checking for danger signs and referring as needed, counselling on early and exclusive breastfeeding, cord care with chlorhexidine, and recommending regular postnatal care (PNC) visits at the health facility.

Despite these strengths, the Malawi ENAP lacks proper monitoring and supportive supervision guidance to ensure enforcement. Additionally, understaffing at the national level, with only a singular MOH staff assigned as a national focal point for newborn health, was listed as an impediment to national level leadership in newborn care. Because of this, it was noted that the implementation of key activities and policies on newborn health often were delayed.

While leadership has some weaknesses, the government of Malawi has recognized these issues and has formed a Newborn Steering Committee – comprised of personnel from World Health Organization (WHO), MOH, UNICEF, nongovernmental organizations (NGOs), midwifery associations, USAID, teaching institutions, pediatric associations, and other partners – which is currently working on issues around and advocates for improving care of the SSNB within the Safe Motherhood Technical Working Group (TWG). This TWG plays a key role at the national level in advocating for improved maternal and newborn health.

2. Health workforce

A major bottleneck affecting the health workforce is the lack of monitoring and supervision protocols within the Malawi ENAP and the National Multi-Sector Nutrition Policy to ensure the national care guidelines around care and feeding of the SSNB are being followed. Half of the facilities assessed – Balaka District Hospital, Kamuzu Central Hospital, Likuni Hospital, Bwaila Hospital – had incomplete or no visibly displayed protocols for assessing, caring for, and monitoring the SSNB. Out of the eight facilities, only Bwaila Hospital and Kamuzu Central Hospital reported having job aids for care and feeding of the SSNB. Despite supportive supervision around this being prioritized in the Malawi Child Health Strategy, all eight facilities reported that no supportive supervision protocols are in place to monitor and ensure adequate care of the SSNB. Some facilities reported that supportive supervision does take place, however, they noted that there is no formal system set up for this to ensure it occurs on a regular basis for all providers. All facilities reported that no mechanisms are in place for reviewing the competencies of cadres who provide care for small and sick babies.

Skills for care of the SSNB

All facilities reported that nurse midwives, clinicians, and physicians are authorized to provide full care to the SSNB, which includes the following: breastfeeding counseling, including for mothers whose babies require cup or NGT feeds; placement of and feeding via NGT; cord care; assessment of and treatment for infection; KMC counseling; weighing and assessing for LBW status; provision of IV fluids; provision of oxygen; warmth care; assessing for danger signs. Either auxiliary nurses and/or patient attendants were also authorized to provide support around breastfeeding counselling and KMC and assess for clinical danger signs

to refer to a higher-level cadre. Yet, less than half of health facility staff who are authorized to provide care to SSNBs are equipped with the skills to properly provide this care.

Pre-and in-service training, staff rotation, lack of mentoring/supportive supervision

Care of the SSNB is part of pre-service trainings in Malawi, yet, the quality and depth of this training was noted to be insufficient to adequately prepare health care workers. For example, KMC and alternative feedings, including via cup or NGT, were noted to not be included in pre-service trainings for all clinical staff.

Five hospitals – Bwaila Hospital, Balaka District Hospital, Dowa District Hospital, Kasungu Hospital, Likuni Hospital – reported receiving in-service trainings, including on Basic Emergency Obstetric and Newborn Care (BEmONC), Care of the Infant and Newborn (COIN), and KMC training, from NGOs and/or the Pediatrics and Child Health Association of Malawi (PACHA) (Dao, 2012; O’Hare et al., 2016). However, all facility staff interviewed lamented that clinical staff must rotate to a different ward or hospital each year. This frequent turnover leads to a decreased proportion of maternity ward staff at a given facility who have received in-service training, as new staff are frequently coming from different wards or smaller facilities or hospitals that have not received the training. Furthermore, in Malawi, there is not a culture where mentorship and coaching among health staff are encouraged, which can prevent knowledge sharing and skills-building gained among select staff from being shared with others. MCSP provided on-site mentorship through supportive supervision visits with the MOH to strengthen knowledge in infant feeding and the Ten Steps and skills in breastfeeding counseling, however, facility staff interviewed noted that inadequate provider-to-provider mentorship persists as an issue. Key reasons were noted to be staff attitudes, employees not understanding how it can benefit them, and understaffing.

Overburdened and understaffed maternity wards was listed as a key barrier to providing adequate and timely breastfeeding promotion and support, despite previous BFHI training. Providing breastfeeding counselling and education is time consuming, and staff interviewed noted that high volumes of deliveries and low staff coverage frequently prevent all mothers from receiving this support. Often, clinical staff rush from one delivery to the next, making it difficult to encourage mothers to provide skin-to-skin care, begin early initiation of breastfeeding within one hour after birth, perform EBF, or troubleshoot positioning and attachment issues.

Inadequate linkages from the facility to community levels was also cited as a key barrier. HSAs are trained on breastfeeding counselling and promotion, KMC, and assessing for danger signs to refer to a facility, yet all facilities noted that the HSAs are not providing routine newborn monitoring within the community. Community care groups (CCGs), a model for increasing coverage of interventions in resource-constrained settings that engages community volunteers, each responsible for 10-15 households, has been shown to improve maternal, neonatal, and child health outcomes (Perry et al., 2015). In Malawi, while the MOH is currently championing expanding CCGs for reaching mothers and children in rural settings, the number of CCGs and their capacity to refer and provide key components of care for the SSNB require further growth and scale-up across all districts.

3. Essential medical products and technologies

Seven of the eight facilities noted a lack of feeding cups, which are not included in the MOHs ordering system for essential medical products and technologies. Staff reported they use the caps to bottles of IV fluids for cup feeds when a baby is unable to suckle. Balaka District Hospital noted their feeding cups are provided by the USAID-funded Every Preemie—SCALE project. While heaters and incubators are included in the national list of essential medical products and technologies, all eight facilities noted a complete lack of or

inadequate number of these for maintaining warmth in the nursery. Most facilities stated they rely on keeping windows closed for warmth, which is less effective in the cooler months. Some facilities reported inadequate stocks of thermometers, weighing scales, and/or refrigerators for storing certain medications, though stocks of antibiotics and chlorhexidine were not noted to be an issue. All facilities noted constant stock of NGTs, including smaller sizes for small newborns, as these are routinely provided by Rice University.

4. Health service delivery

Family-centered care is an approach that recognizes the family as partners in health care treatment and decision-making and promotes collaboration in care between health professionals and families (Kuo et al., 2012). A prevailing barrier to providing adequate family-centered care was limited space throughout the maternity ward. In the nursery, this leads to each bassinet being shared by two infants, even in cases of sepsis or other infections. There are typically no chairs in the nursery for mothers to bond with and breastfeed their baby. At Kamuzu Central Hospital – one of three tertiary care facilities in Malawi – mothers with a small and/or sick baby in the nursery are allotted specific time to feed their baby. Once the allotted time has elapsed, the mother is asked to leave, whether or not her baby has been adequately fed. Often times, there may not be a clinical staff member in the nursery to provide support to a mother and assist with positioning and attachment, hand expression, and/or cup feeding. This can lead to babies getting underfed for prolonged periods if a mother has difficulty with these skills. In the PNC ward, many mothers do not have a bed to sit or sleep on, making it difficult to provide skin-to-skin care and also limiting privacy. Due to this lack of space, mothers are often forced to sleep in the corridors of the facility. Furthermore, most facilities reported providing only one meal per day for mothers, which is insufficient to meet her nutritional needs and support breastfeeding during her stay at the facility. Many women travel long distances to get to a secondary or tertiary health facility, which means husbands and caregivers often are not able to join the mothers and provide them with care and food. For mothers with small and/or sick babies that require a prolonged hospitalization of several days to several months, these suboptimal conditions lead to mothers trying to discharge themselves and their baby earlier than medically indicated, which was cited as an issue at all eight facilities.

Each of the challenges and bottlenecks listed have cumulatively led to low morale in the maternity wards that were assessed, which was reported to further affect motivation to provide adequate care and feeding of the SSNB.

5. Health information systems

Because several indicators needed to adequately monitor newborn care are not routinely tracked in Malawi's Health Management Information System (HMIS), it is difficult to monitor progress in these indicators between national health surveys. These include EBF, initiation of skin-to-skin care within one hour of birth, proportion of mothers counselled on breastfeeding following childbirth, and KMC. Of note, these are currently included in the health facilities' clinical records and registers. Rates of pre-term birth and LBW as well as initiation of breastfeeding within one hour of birth are currently tracked in the HMIS.

MCSP supported the MOH in the revitalization and national scale-up of BFHI, leading to the certification of three hospitals as Baby-Friendly. As part of these efforts, a national stakeholders' workshop was held in Lilongwe in August 2017, during which the MOH pledged its commitment to institutionalize BFHI in Malawi. While the Nutrition Directorate had not implemented internal monitoring of BFHI by the time this bottleneck analysis was conducted, the MOH, moving forward, is integrating monitoring of BFHI within Malawian health facilities into national policies and protocols to track health facilities' adherence to the Ten Steps.

6. Family and community engagement

While family-centered care can improve health outcomes and contribute to increased engagement of mothers, fathers, and other caregivers in infant care, all facilities had significant barriers in providing family-centered care (Kuo et al., 2012). In addition to the lack of structural capacity previously discussed – which limited mothers’ ability to bond with and breastfeed their infants in NICUs – all facilities were noted to have a lack of male involvement or strategies to increase engagement of males in care in maternity wards. Long distances to travel to secondary and tertiary health facilities as well as lack of space in maternity facilities were noted as challenges in increasing male involvement. Another key sociocultural barrier was that mothers and other caregivers often interfere with oxygen therapy and NGTs given misperceptions and a lack of understanding around these treatment modalities. They are thought to cause harm to the baby, and mothers and caregivers often pull out the tube during feeding or administration of oxygen.

A key barrier to improving community engagement is that none of the facilities have strategies in place to facilitate continuity of care for SSNBs in the community.

Solutions for Addressing Identified Bottlenecks and How They Link to BFHI

Several bottlenecks and the proposed solutions correspond with the BFHI global guidance and the Ten Steps, demonstrating that BFHI could provide a platform for strengthening care and feeding of the SSNB. Given the findings detailed in this report paired with Malawi’s high rates of preterm births and neonatal mortality, feeding concerns with the SSNB should be more strongly incorporated into BFHI, through the integration of core components of the Neo-BFHI. The Neo-BFHI guidance focuses on the importance of family-centered care and aims to provide greater breastfeeding support to mothers and families with small and/or sick babies. It also provides expanded education around alternative feeding concerns for the newborn—including hand expression of breast milk, cup feeds, and NGT feeds. Although the Neo-BFHI guidance would require updates to align with the revised Ten Steps and adaptations for the low-resource setting, core components of it could be successfully integrated to address some of the bottlenecks outlined in this report. Table 2 illustrates solutions for the identified bottlenecks along with the corresponding Neo-BFHI and revised BFHI step(s) and/or Neo-BFHI guiding principles that could be strengthened by and help address these areas.

Proposed solutions for addressing the significant bottlenecks outlined in this report came from discussions with key MOH and health facility personnel and are described below, by solution theme.

Ensuring availability of commodities and expanding capacity of hospitals to care for the SSNB

- **Increasing the capacity of select rural health facilities to provide care for SSNBs.** Given the limited number of health facilities that are equipped to provide care for the SSNB, long distances to travel to these facilities was cited as a key barrier to obtaining adequate care for this population. Malawi has maternity Centers of Excellence, which are high-volume community hospitals that adhere to standards of care. These facilities are larger than community health centers but are located in rural areas and have demonstrated their ability to adhere to national care guidelines. Improving the capacity of these facilities around newborn care, in addition to growing the number of Centers of Excellence through capacity-building, would allow for care of the SSNB to be more accessible and would also strengthen step 10 of the BFHI/Neo-BFHI.

- **Increasing structural capacity of hospitals already providing care for the SSNB.** Limited space in maternity wards was found to be a significant barrier to providing family-centered care, which is a guiding principle of the Neo-BFHI. Stakeholders should advocate for increased funding to improve the structural capacity of maternity facilities providing care for SSNBs to minimize this challenge and to improve family-centered care. Doing so could reduce infection risks in the nursery by creating more space in the nursery/NICU and reducing the need for multiple infants to share a bassinet; improve bonding and breastfeeding practices between mothers and their infants in the nursery/NICU; and aid in improving male engagement.
- **Improving the availability of essential medical products and technologies.** Non-availability of feeding cups, heaters, and incubators was noted to prevent adequate care of the SSNB. In addition to advocating for feeding cups to get added to the national ordering system for essential medical products and technologies, working with partners and the MOH to ensure adequate stocks at national and subnational levels is needed.

Increasing support for newborn care within the MOH

Lack of support at the national level of the MOH was noted to be a key barrier in adequate and timely implementation of newborn-related activities and policies, with a singular focal point in the MOH for newborn care. Budgeting for support for the SSNB with annual health budgets is needed to increase national-level leadership through the addition of another MOH newborn focal person to improve care for SSNBs.

Task shifting

Task shifting of clinical duties in maternity wards to a variety of cadres – including auxiliary nurses and support staff, such as patient attendants and cleaning staff – can ease the burden of high patient volumes on clinical staff and help improve care for the SSNB. With capacity-building, these cadres could assess for danger signs to refer as well as counsel mothers on early and exclusive breastfeeding, hand expression of breast milk and cup feeding, and KMC. This could also aid in strengthening steps 3, 4, 5, 6, 8, and 10 of the revised BFHI/Neo-BFHI.

Improving mechanisms for monitoring care of the SSNB

Lack of monitoring of care of the SSNB and corresponding supportive supervision mechanisms were found to be significant barriers in provision of adequate care for SSNBs. The following key actions should be put in place to address these:

- Incorporate monitoring of clinical care practices of health providers around the SSNB into national policies and guidelines, including the Malawi Every Newborn Action Plan. The 2018 revised Ten Steps includes internal monitoring as part of the new step 1 and would provide a platform through which to improve monitoring and quality improvement systems around feeding practices of infants.
- At the national level, development of standardized protocols, guidelines, and job aids for maternity facilities to assess, care for, and monitor SSNBs. As outlined in Table 2, this could help to strengthen step 1 of the BFHI/Neo-BFHI.
- Develop standardized supportive supervision protocols for improving care for SSNBs – both for facility staff and district and national level MOH staff. This solution would support step 2 in the BFHI/Neo-BFHI.
- Develop standardized core competency reviews to assess whether health facility staff meet the core competencies to provide care for SSNBs.

Building capacity of clinical maternity staff

Trainings and skills-building around care of the SSNB for clinical maternity staff was found to be inadequate. All aspects of caring for SSNBs should be adequately incorporated into pre-service trainings at teaching institutions for nurse midwives, clinicians, and physicians. Collaboration between the MOH, medical and health associations, and other partners to improve professional standards could help to ensure this content is adequately integrated into pre-service curricula. Additionally, the MOH should work with implementing partners to put in place regular in-service trainings that cover all aspects of care for SSNBs at all facilities providing this specialized care. Furthermore, mentoring and coaching of health providers on key skills should be systematically included in routine MOH supportive supervision visits. Ensuring this capacity-building would strengthen step 2 of the BFHI/Neo-BFHI.

Strengthening routine monitoring

To track facilities' adherence to the Ten Steps and the number of facilities with Baby-friendly designation, monitoring of Baby-friendly designation should be included as a key action in the Malawi Every Newborn Action Plan. Additionally, improving monitoring of care of SSNBs through routine tracking of key indicators in the HMIS will be essential to improving care. The following indicators should be integrated in the HMIS, with disaggregation by term vs pre-term infants, to better understand any gaps or improvements in infant feeding or care practices, by term status:

- Percentage of babies born in a calendar year in facilities currently designated Baby-friendly
- EBF upon discharge from the facility
- Early initiation of skin-to-skin care within one hour after birth
- Proportion of mothers counseled on breastfeeding following childbirth prior to discharge

Increasing community and family engagement

A key barrier in optimizing family-centered care is the lack of male involvement in newborn care. Given increased male involvement in care has been shown to lead to improved outcomes for maternal and newborn health (Tokhi et al. 2018), the Malawi Every Newborn Action Plan should prioritize increasing male involvement as a key action for newborn care. Maternity facilities should also facilitate initiatives that aim to improve male involvement – including community outreach and education and facility-based counseling. Additionally, improving structural capacity of maternity facilities could promote male involvement by addressing the issue of limited space, which affects partners/fathers.

It is essential that sociocultural barriers, including misperceptions around specialized care practices – such as NGT feeding and oxygen therapy – are addressed. This must be done through counselling and education around these therapies with mothers and caregivers and should include behavior change communication materials.

The lack of linkages from the facility to the community was found to be a key barrier in care for the SSNB. Given the MOH is currently championing CCGs as a means for improving continuity and quality of care in rural areas, this care delivery model should be expanded and engaged more widely nationally, which would strengthen step 10 of the BFHI/Neo-BFHI. CCG volunteers should receive training on core components of care of the SSNB, including assessing for danger signs to refer as well as counseling mothers on early and exclusive breastfeeding, hand expression of breast milk and cup feeding, and KMC. With an increased focus on alternative feeding concerns, the Neo-BFHI could provide a platform to integrate these CCG trainings.

Health facilities should coordinate with CCGs in their facility's catchment area and inform mothers who they can contact in the community following discharge.

Conclusion

Improving care of the SSNB is essential to reducing neonatal, infant, and child mortality. This report highlights key bottlenecks impeding adequate provision of care for SSNBs in Malawi as well as recommended next steps.

Summary of next steps

Addressing gaps in each of the six building blocks will be critical for improving newborn health outcomes in Malawi. The key bottlenecks and recommended next steps are outlined below, by ENAP health system building block.

1. Policy, Leadership, and Guidance

The MOH has demonstrated and communicated its commitments to BFHI and recognizes it as an effective initiative for improving breastfeeding rates by integrating BFHI into the Infant and Young Child Feeding Guidelines for Malawi. While BFHI is not specifically outlined in the National Multi-Sector Nutrition Policy 2018-2022, infant and young child feeding has been prioritized. Further, in the future, Malawi has the opportunity to strengthen its commitment to BFHI by including the initiative in all newborn health and nutrition policies, with further and continued advocacy, especially around care and feeding of the small and sick newborn. Additionally, referencing the IYCF Guidelines for Malawi in the national nutrition, newborn, and child health policies would further help to strengthen nutrition and newborn integration and support the BFHI.

Increasing national level MOH support for newborn health is necessary for ensuring activities that aim to improve care and feeding of the SSNB and will require advocacy for increased funding from MOH.

2. Health Workforce

National guidelines and protocols for providing supportive supervision and monitoring care of the SSNB is necessary for ensuring health providers who provide newborn care are providing optimal care as set forth in the Malawi Every Newborn Action Plan. This should include guidance and tools for routine supportive supervision on all aspects of care and feeding of the SSNB from district MOH staff to the health facility as well as routine supportive supervision within the health facility to strengthen these skills.

In addition, lack of skills to provide adequate care and feeding of the SSNB was a major bottleneck. Training for building these competencies must be adequately covered in pre-service and in-service trainings for all health providers as well as through on-site mentoring and coaching. To aid in addressing the problem of under-staffing, task shifting to support staff should be used as a strategy for improving care. Additionally, health providers must be supported with job aids for providing all essential care actions and adequate feeding of the SSNB.

3. Essential Medical Products and Technologies

The national ordering system for essential medical products and technologies must ensure that facilities that provide care for SSNBs have adequate stocks of feeding cups, thermometers, heaters, incubators, and weighing scales.

4. Health Service Delivery

Improving the structural capacities of facilities that care for SSNBs is essential for providing adequate care to this population. This should include growing the size of NICUs to prevent infants from having to share bassinets and to allow space for mothers and partners to bond with and feed their infants.

Additional space is also needed in PNC wards to ensure mothers have a bed to sleep on. Furthermore, women in the maternity ward should receive adequate nutrition to meet their needs.

Given the overburdening of health facilities that provide care and feeding of small and sick babies and the long distances many women have to travel to get to these facilities, the Malawi MOH should consider building the capacity of rural health facilities. This would include building the capacity of more rural health facilities to become Centers of Excellence and to further strengthen existing, rural Centers of Excellence to enable them to provide care for SSNBs.

5. Health Information Systems

To improve monitoring and care of SSNBs, the following indicators – which are currently entered into hospital registers – should be integrated into and routinely tracked in Malawi’s HMIS: EBF at discharge from the facility, initiation of skin-to-skin care within one hour of birth, proportion of mothers counselled on breastfeeding following childbirth.

6. Family and Community Engagement

Improving family and community engagement can improve maternal and newborn health and nutrition outcomes. The MOH should develop initiatives that aim to increase male and partner engagement in maternity care. Additionally, the MOH should continue to champion and grow CCGs and link them to health facilities in their communities.

To address sociocultural barriers to specialized care practices, including NGT feeding and oxygen therapy, counseling and education around these therapies with mothers and caregivers is essential.

Sustaining the BFHI

The BFHI/Neo-BFHI could provide an ideal platform for improving care and feeding of the SSNB, and this report outlines the various bottlenecks that could be addressed through the Ten Steps. With the recently revised BFHI Implementation Guidance, which emphasizes sustainability and scaling-up BFHI, the MOH should consider key recommendations for adapting their existing BFHI guidelines with the revised guidance:

- Integrating BFHI into all national health and nutrition guidelines and policies could help to ensure its sustainability and universal coverage.
- It is necessary that BFHI be integrated into Malawi’s already existing comprehensive breastfeeding programs and initiatives.
- Internal monitoring of adherence to clinical practices around infant feeding has been integrated into step 1 of the revised BFHI. To meet this standard, the MOH must integrate monitoring of clinical practices as well of two key indicators – early initiation of breastfeeding within one hour of birth and EBF upon discharge – into its BFHI training and coaching as well as self and external assessments.
- The MOH Nutrition and Reproductive Health Units should maintain champions and coordination for BFHI to ensure sustainability of the program, even in the absence of external support. Advocacy to bring up the visibility and importance of breastfeeding, in terms of economic productivity and the health of population, may aid in convincing the government to continue BFHI with quality.

Key stakeholders and other partners in Malawi can take key actions to help BFHI grow sustainably:

- Assist the MOH in designating the hospitals that underwent successful external assessments but have not yet received Baby-friendly designation
- Provide mentoring and coaching to already trained facilities to assist them in obtaining Baby-friendly designation

- Integrate core components of Neo-BFHI into Malawi’s BFHI program, including: gaining competencies and skills around alternative feeding methods, including hand expression of milk, cup feeds, and NGT feeds; improving male and partner engagement in care; creating more family-centered NICUs through growing the structural capacity to allow space for mothers and partners to bond with and feed their infants
- Grow the number of trained staff at already trained facilities, including support staff, to increase the percentage of staff with the necessary competencies for supporting mothers and families to breastfeed
- Provide technical assistance to the MOH around integrating internal monitoring into its BFHI platform
- Continue to advocate for BFHI to be integrated into Malawi’s standard of practice and all health and nutrition guidelines and protocols
- Champion CCGs and linking facilities with CCGs in their community
- Work with the MOH to determine a plan for sustaining the designation process once external support is not available, which would be critical for when considering how to incorporate the 2018 revised BFHI guidance into Malawi’s BFHI platform.

Through sustainably addressing these issues, Malawi can demonstrate its commitment to saving newborn lives and investing in the future of its people. This will require commitment and advocacy from the MOH, policy makers, donors, and NGOs to ensure this change.

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Appendix I. Bottleneck Analysis Tool for the Identification of Barriers and Solutions in the Care and Feeding of SSNBs: Health Facilities

Background

USAID's Maternal and Child Survival Program (MCSP) is supporting the revitalization of the Baby-Friendly Hospital Initiative (BFHI) and working to strengthen the care and feeding of SSNBs. As part of this work, MCSP will collaborate with in-country partners to conduct a bottleneck analysis, in order to better understand the policies and practices that impact the care and feeding of hospitalized newborns. The bottleneck analysis will include an initial desk review of relevant documents, followed by interviews and observations at selected health facilities; the information gathered will be used to inform subsequent activities to improve SSNB care and BFHI revitalization. Lessons will be shared with stakeholders within each country, as well as with the global newborn health and nutrition communities to inform future policies and programs.

Process for conducting the bottleneck analysis

The global MCSP Nutrition and Newborn Health Teams will collaborate with the in-country MCSP Nutrition and Newborn Health counterparts and in-country stakeholders (e.g., MOH and/or other implementing partners) to conduct the bottleneck analysis.

This activity aims to identify overarching health system bottlenecks that impact newborn health and nutrition interventions within the context of BFHI, as well as bottlenecks related to newborn health interventions that are specific to the care and feeding of SSNBs. This bottleneck analysis tool is structured along broad health system components: policy, leadership, and governance; health workforce; essential medical products and technologies; health service delivery; health information systems; and family and community engagement. Through the process of identifying and categorizing bottlenecks, they will reflect whether the health system component is:

- Good (*no bottleneck to scale up*)
- Needs some improvements (*minor bottleneck to scale up*)
- Needs major improvements (*significant bottleneck to scale up*)
- Inadequate (*very major bottleneck to scale up*)

Steps in the activity include:

- Secure approvals from relevant authorities (e.g., MOH)
- Select sites and identify the respondents at each site
 - Sites should be health facilities that provide in-patient care for SSNBs and where BFHI revitalization efforts as well as training on care for the SSNB have taken place

- Respondents should include at least one person who is engaged in the provision of care for SSNBs (e.g., nurse, nurse midwife, physician) and one person who is in a supervisory role)
- Convene a meeting of the team to review the tool (and, if needed, adapt it to fit the country context) and process for conducting the BNA
- Complete a desk review of relevant country documents
 - Documents may include national policies/strategies/plans, guidelines/standards, surveys/assessments, etc. that are related to newborn health and nutrition/BFHI
- Conduct the BNA at the selected sites
 - Some questions about national-level matters may be answered by the desk review or by having initial conversations at the central level, which will save time during the site visits
 - At the end of each section in the tool, review the bottlenecks identified for that section/category and ask respondents to:
 - Select the highest priority bottlenecks (for that section/category) related to feeding SSNBs
 - Offer their proposed solutions for each (solutions should be feasible and evidence-based)
 - At each facility, respondents should create an overall summary of the bottlenecks (i.e., consider all bottlenecks in all categories, and select the ones that are the biggest barriers). Additionally, they should identify the bottlenecks that are “low-hanging fruit” and identify solutions for how to have some quick wins
- At the central level with the team, review, discuss, analyze, and document all information gathered through the desk review and site visits
- Share findings with in-country stakeholders, as appropriate, and with the global MCSP team

1. Policy, leadership, and governance

Please see Appendix III. Bottleneck Tool—Desk review and national/district level questions for MOH.

2. Health workforce: Facility level

2.1 Are there protocols and job aids for health workers at your facility that reflect their role in assessing, caring for, and monitoring sick and small/LBW babies at the health facility? Please explain.

2.2 In the tables below please indicate whether each cadre of health worker is authorized and skilled to provide the listed service/intervention in your facility (For community health workers, please specify regarding those in your district/catchment area).

2.2.1 Basic essential newborn care for all newborns

Cadre	Authorized to provide care to SSNB or to refer (Please specify at all levels of care, i.e., community, health facility, hospital?)	Skilled to provide care to SSNB or to refer (Please specify at all levels of care?)	Percentage of staff authorized and trained to provide care to SSNB
Community health workers			
Nurses/Auxiliary nurses			
Midwives/Auxiliary midwives			

Physicians			
Other (please list)			

2.2.2 Care for sick and small babies *(please note cadres authorized/ skilled to specifically support feeding of SSNBs, such as with NGT/OGT feeding)*

Cadre	Authorized to provide care to SSNB or to refer (Please specify) at all levels of care, i.e., community, health facility, hospital?	Skilled to provide care to SSNB or to refer (Please specify) at all levels of care?	Percentage of staff authorized and trained to provide care to SSNB
Community health workers			
Nurses/Auxiliary nurses			
Midwives/Auxiliary midwives			
Physicians			
Other (please list)			

2.2.3 KMC

Cadre	Authorized to provide care to SSNB or to refer (Please specify) at all levels of care, i.e., community, health facility, hospital?	Skilled to provide care to SSNB or to refer (Please specify) at all levels of care?
Community health workers		
Nurses / Auxiliary nurses		
Midwives / Auxiliary midwives		
Physicians		
Other (please list)		

2.2.4 Home-based postnatal care

Cadre	Authorized to provide care to SSNB or to refer (Please specify) at all levels of care, i.e., community, health facility, hospital?	Skilled to provide care to SSNB or to refer (Please specify) at all levels of care?
Community health workers		
Nurses / Auxiliary nurses		
Midwives / Auxiliary midwives		
Physicians		
Other (please list)		

2.3 Are there competency-based training programmes through which respective cadres of health care workers acquire the necessary knowledge and skills to support care and feeding of small and sick babies at your facility? (For CHWs please note if those in your facility's catchment area/district acquire knowledge through competency-based training programs for the interventions listed below). Please indicate in the table below the type of training for each cadre, for each intervention area. If the cadre is not authorized to provide a service, please list "N/A."

2.3.1 Care of SSNBs (e.g., Essential Care for Small Babies)

Cadre	Pre-service training	In-service training
Community health workers		
Nurses / Auxiliary nurses		
Midwives / Auxiliary midwives		
Physicians		
Other (please list)		

2.3.2 KMC

Cadre	Pre-service training	In-service training
Community health workers		
Nurses / Auxiliary nurses		
Midwives / Auxiliary midwives		
Physicians		
Other (please list)		

2.3.3 IV fluids for SSNBs

Cadre	Pre-service training	In-service training
Community health workers		
Nurses / Auxiliary nurses		
Midwives / Auxiliary midwives		
Physicians		
Other (please list)		

2.3.4 NGT/OGT feeding for SSNBs

Cadre	Pre-service training	In-service training
Community health workers		
Nurses / Auxiliary nurses		
Midwives / Auxiliary midwives		
Physicians		
Other (please list)		

2.3.5 Counseling on early initiation of breastfeeding <1 hour of life and exclusive breastfeeding until 6 months of life

Cadre	Pre-service training	In-service training
Community health workers		
Nurses / Auxiliary nurses		
Midwives / Auxiliary midwives		
Physicians		
Other (please list)		

2.4.1 Do health workers who assess and manage newborns at your facility provide adequate feeding counselling and support for:

- Feeding by cup
- Expression of breast milk by hand

2.4.2 If so, what percentage of your staff provide these services and roughly what percentage of the time are they doing so? For example, do all staff who manage newborns provide this counselling and support? Is this feeding counselling and support given at all times with all mothers with newborns?

2.5 Are outreach services in place so that staff at your facility can provide newborn care during home visits or refer to care groups in the community?

2.6 Are there policies in place at your facility to ensure monitoring and care of sick/small babies by competent staff around the clock? What is the policy, if it exists?

2.7 What systems are in place for ongoing review of competencies of cadres (physicians, nurses, midwives, etc.) providing care for sick and small newborns at your facility? If none exists, please explain why.

2.8 What supervision and mentoring mechanisms are in place to ensure that trained health workers adequately take care of small & sick babies at your facility? Explain

2.9 Are there supervision and/or mentoring guidelines and systems in place to support the provision of effective KMC including support for feeding of low birthweight/small babies at your facility?

Summarize the highest priority bottlenecks for HEALTH WORKFORCE—FACILITY LEVEL, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution

3. Essential medical products and technologies: Health facility level

3.1 Are the following supplies available for supporting KMC and feeding of low birth weight/small and sick babies, who may not be able to breastfeed directly, at your facility?

Tick as appropriate (√)

Cups

Nasogastric tubes

Breast milk containers

Pasteurizers for breast milk (Not applicable in Malawi)

Refrigerators for breast milk storage (Not applicable in Malawi)

Summarize the highest priority bottlenecks for ESSENTIAL MEDICAL PRODUCTS AND TECHNOLOGIES—HEALTH FACILITY LEVEL, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution

4. Health service delivery: Facility level

4.1 Does the organization of newborn care services within your health facility allow for full supportive care and feeding of SSNBs? Explain.

4.2 What other barriers exist that need to be addressed in the delivery of care and feeding services for SSNBs at your facility? Explain issues related to the following and any others that exist:

- Lack of information on clients' needs for improved performance
- Health care workers' attitudes

- Lack of family-centered care
- Structure of services at the health facility
- Supply of NGTs and other supplies for alternative breast milk feeding

4.3 Is the use of KMC for stable low birth weight babies is recommended at your facility? Describe when it

4.4 Are there systems in place to promote the adherence to national standard treatment guidelines or clinical protocols on the use of KMC at your facility?

- If yes, please explain what these systems are?
- If none, please explain why?

4.5 Are there other programs that aim to increase implementation of KMC at your facility? (Provide details)

4.6 What type of feeding methods are given to babies who cannot breastfeed directly at your facility? List below all methods used to feed SSNBs with breast milk:

4.7 Is there a clearly defined supportive environment in place for extra support for SSNBs at your facility for:

- Breastfeeding and other methods of providing breast milk
- Warmth?
- Treatment facilities/supplies for managing infections?

4.8 Does the structure of your health facility prevent women from practicing KMC?

4.9 Are there any financial or structural barriers at your facility for mothers with babies who require KMC and are eligible to practice, such as:

- How feasible is it for mothers to agree to a prolonged stay in the hospital?
- Is food and lodging available for mothers/newborns who are eligible for prolonged stay?

Summarize the highest priority bottlenecks for HEALTH SERVICE DELIVERY, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution

5. Health information systems: Facility level

5.1 Ongoing Critical Reviews for Newborn Care and adherence to BFHI requirements:

- Is a comprehensive assessment of appropriate newborn care done for all newborns at your facility, including SSNBs?
- Is a comprehensive assessment of appropriate newborn feeding done for all newborns at your facility? For SSNBs? Does it include review of adherence to BFHI requirements?
- Does this assessment include protocols for clinical audits?

5.2 Is KMC included in your facility's standard clinical records or checklists (e.g., birth records or child health card). Please explain.

Summarize the highest priority bottlenecks for HEALTH INFORMATION SYSTEMS—FACILITY LEVEL, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution

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6. Family and community engagement: Facility level

6.1 Are there respective IEC materials at your facility focused on:

- Essential care of the newborn
- Importance of exclusive breastfeeding
- Importance of early breastfeeding and skin-to-skin care
- Proper positioning and attachment and who to contact at the community and health facility levels if having difficulties with breastfeeding
- Assisted feeding with breastmilk for SSNBs
- Recognition of newborn danger signs
- Taking appropriate action for newborn danger signs, including timely seeking of health care?
- Community/public awareness of health facilities that provide essential newborn services?

6.2 Are the above IEC materials available in appropriate local language(s) at your facility?

6.3 Describe how referral/counter-referral and follow up mechanisms between the community and your health facility are organized to facilitate timely referral and access to care:

- For all newborns
- For SSNBs
- If they are born at home or at a lower level health facility and referred to higher level care
- After they are discharged from facility care

6.4 Is the use of specialized services at your facility, such as KMC, NGT feeds, etc., limited by any of the following:

- Socio-cultural barriers (misconceptions, beliefs, seclusion of newborns)
- Lack of male involvement
- Long distances to health facilities
- Other?

6.5 Are postnatal visits conducted to ensure the continuity of care of SSNBs (including KMC) from your facility to the community?

- Do attitudes of health care workers affect the uptake this intervention?
- Is cultural perception an issue? Please explain.

6.6 Describe strategies already in place to facilitate continuity of care for SSNBs in rural and remote areas in the catchment areas of your facility.

6.7 Are there specific efforts to increase the awareness of the general public in the catchment area of your facility, adolescent girls, pregnant women, and young couples on:

- The benefits of KMC?
- Timely recognition of and care seeking for a newborn that is LBW and/or has signs of illness?
- The importance of early initiation of and exclusive breastfeeding?

6.8 Describe any strategies to facilitate male engagement in the care and feeding of SSNBs at your facility.

6.9 What other challenges do families and communities face that limit the use of inpatient newborn care services at your facility and catchment area? (Explain)

Summarize the highest priority bottlenecks for COMMUNITY ENGAGEMENT, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution

After reviewing all bottlenecks for all categories, select the 3-5 highest priority bottlenecks and describe the actions that can be taken to overcome them. Are these actions feasible? Who will be responsible? How will you know when the challenges have been overcome?

Bottleneck	Actions to achieve solutions

Appendix II. Bottleneck Analysis Tool for the Identification of Barriers and Solutions in the Care and Feeding of SSNBs: Desk Review, National and District Level

Background

USAID's Maternal and Child Survival Program (MCSP) is supporting the revitalization of the Baby-Friendly Hospital Initiative (BFHI) and working to strengthen the care and feeding of SSNBs. As part of this work, MCSP will collaborate with in-country partners to conduct a bottleneck analysis, in order to better understand the policies and practices that impact the care and feeding of hospitalized newborns. The bottleneck analysis will include an initial desk review of relevant documents, followed by interviews and observations at selected health facilities; the information gathered will be used to inform subsequent activities to improve SSNB care and BFHI revitalization. Lessons will be shared with stakeholders within each country, as well as with the global newborn health and nutrition communities to inform future policies and programs.

I. Policy, leadership, and governance: National and district level

Desk review

1.1 Is there a national NBH/MNH strategy or plan? Yes/No

1.2 Does the national NBH/MNH strategy identify averting neonatal deaths and improving newborn health, in general, as a priority? (DESK REVIEW)

- Is there a situation analysis of newborn health available? Yes/No Tick as appropriate (✓)
- Is there a baseline figure for neonatal mortality rate? If yes, include rate here _____
- Is there a specific target for NMR including a projected date (Month/Year)?

1.3 How does the national strategy identify and address the leading causes of neonatal mortality (prematurity, asphyxia, infection) as a priority for RMNCH interventions?

1.4 Does the national strategy include the following as priority interventions for newborn health (yes/no)

- Essential newborn care for all babies
- Care for small and sick babies³
 - Resuscitation
 - Kangaroo Mother Care (KMC)
 - Treatment of infections
 - Feeding support / alternative feeding methods

³ Newborns with severe infections, as well as those who are too small to maintain their body temperature, and/or who are unable to breathe or feed actively, will need full supportive in-patient care. This care includes regular monitoring and assessment of the baby's ongoing condition, along with provision of specialized interventions which may include provision of IV fluids, nasogastric/intragastric tube feeding, and safe oxygen administration.

- Provision of IV fluids
- Safe oxygen use
- Promotion of family-centered care

1.5 Are there national guidelines and/or clinical protocol documents for basic essential newborn care for all newborns? Yes/No. For small/sick newborns? Yes/no When were they published (year/month)?

1.6 What are the key actions recommended for care and monitoring of newborns to ensure warmth?

- Hygiene
- Prevention and management of infections, including cord care
- Immediate and exclusive breastfeeding, including counselling and support
- Support for alternative feeding methods
 - Feeding support for small/LBW/sick newborns
 - If yes, are these guidelines and clinical protocols related to feeding in line with the Ten Steps to Successful Breastfeeding? Please explain
- Recognition of danger signs and care seeking
- Timing of postnatal visits

1.7 What key actions are recommended for home-based care for newborns? Are there specific recommendations for home-based care of SSNBs? Please explain.

1.8 Are respective recommendations regularly updated in line with current best practices and latest WHO guidelines? Please explain.

1.9 If national guidelines exist, do they include or specify the following:

- How, when, and where KMC should be implemented?
- Recommendation of how to organize health services to provide KMC?
- Information on feeding and frequency of feeds for low-birth weight babies?
- Information and guidance on breast milk storage
- Tools and equipment to be used for KMC, including service delivery records?
- Are the guidelines in line with the most recent WHO guidelines on KMC?

1.10 If KMC is recommended in national guidelines, are other relevant policies or guidelines aligned with the recommendations? Please explain. For example:

- Do regulatory bodies for midwifery and/or nursing recognize KMC as a high impact intervention?
- Have these bodies set standards and competencies for adequate KMC care?

- Do health facility standards include a plan for space for KMC services including breast milk storage facilities, supplies for cleaning/disinfection of feeding cups, etc.?

1.11 Please describe the level of implementation that has been done thus far for the Baby-friendly Hospital Initiative (BFHI) in the country?

- At what level is this initiative implemented?
- How many health facilities have been trained on BFHI?
- How many health facilities have undergone self-assessments for BFHI?
- How many health facilities have undergone external assessments for BFHI?
- How many health facilities have become Baby Friendly certified through showing they comply with the Ten Steps to Successful Breastfeeding?
 1. Have a written breastfeeding policy that is routinely communicated to all staff, strategically placed for all staff to see, and translated into the commonly spoken language within the health facility's catchment area. Have at least 80% of health facility staff trained in BFHI
 2. Inform all pregnant women about the benefits and management of breastfeeding
 3. Help mothers initiate breastfeeding within 1 hour of life. This should be done through the encouragement of skin-to-skin care within the first hour of life.
 4. Show mothers how to breastfeed and to maintain lactation, even if they are separated from their infants.
 5. Given infants no food or drinks other than breast milk, unless medically indicated
 6. Allow mothers and infants to room in together 24 hours a day
 7. Encourage breastfeeding on demand
 8. Give no pacifiers or artificial nipples to breastfeeding infants
 9. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the health facility
 10. Does the BFHI package include "compliance with the International Code of Marketing of Breastmilk Substitutes?"
- Is there effective national legislation in place to regulate the marketing of breastmilk substitutes and ensure that early initiation and exclusive breastfeeding for the first 6 months of life are promoted, protected and supported?
- Do policies and/or statements of relevant professional associations (e.g. nurse midwives, paediatricians) support early initiation of breastfeeding within 1 hour of birth and exclusive breastfeeding for the first six months?

1.12 Explain whether all relevant policies or regulations in the country, for nutrition and newborn care, are aligned with the recommended basic newborn care for all newborns including SSNBs. For example:

1.13 Is there a national policy for quality improvement? If yes, what is the national policy on quality improvement for maternal and newborn health services? Please specify the name and date of the document.

National review (with MOH)

1.14 Coordination mechanisms:

- Is there a functional national coordination mechanism for newborn issues that also includes focus on SSNBs?
- How is this implemented and through what mechanisms? (highlight appropriate response(s) & provide detail if applicable)
 - Technical working group
 - National steering committee that addresses newborn health
 - Who are the key stakeholders and the regularity of meetings that specifically review progress on newborn health?
 - If such a mechanism/group does not exist, please explain why

District review (with MOH)

1.15 Is there an MOH focal person(s) for newborn health?

- In what department(s) are they located?
 - If only one focal person exists, is this adequate to cover the national needs? Explain
- Does each district currently have an MOH focal point for newborn health? Yes/No
 - If not, please explain why?
- Are there newborn health focal persons based at the district level? Yes/No
 - If not, please explain why?

1.16 Do the District Health Management Teams (DHMTs) make decisions for planning, forecasting and management of resources for newborn health components, including that for SSNBs? Please explain:

Summarize the highest priority bottlenecks for POLICY, LEADERSHIP, AND GOVERNANCE, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution

I. Health workforce: National and district level

Desk review

2.10 What is the national human resource policy for MNH services with respect to the health worker cadres in situations listed below? Please specify the name and date/period of the respective policy document.

- Appropriate skills mix of personnel for facility-based care for sick and small newborns
- Midwives and care of sick and small newborns
- Community health workers (CHW) for home-based follow up of mothers with sick and small newborns discharged home for continued follow-up support

2.11 Are there policies in place at a national level to ensure monitoring and care of sick/small babies by competent staff around the clock? What is the policy, if it exists?

District review (with MOH)

2.12 Explain the distribution of skilled personnel who are trained to provide follow up/linkages between rural and urban populations. Is there a human resource strategy to expand care for sick and small newborns in remote areas through community health workers?

2.13 How is routine supervision done for hospitals and other health facilities at different levels, focused on care of newborns and especially care of SSNBs?

- District level
- National level
- If a documented supervision system does not exist, please explain why.

Summarize the highest priority bottlenecks for HEALTH WORKFORCE—NATIONAL LEVEL, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution
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3. Essential medical products and technologies: National and district level

District review (with MOH)

3.2 Is there a logistics management system that includes essential commodities for newborns, outlined below:

Essential Newborn Commodities:

1. Clean dry towel/suitable cloth, to wipe newborn dry
2. Infant scale for taking baby's weight (for small babies digital scale preferable, to ensure accuracy in monitoring weight increase/decrease)
3. Clean, dry drape to cover baby and mother (while in skin-to-skin contact and thereafter)
4. Cap to cover newborn baby's head
5. Diaper and head covering for infant (find out if supplied by hospital or family/mother?)
6. Antibiotic eye ointment or eye drops
7. Thermometer for temperature reading
8. Clean cloth for cord care
9. Alcohol to cleanse cord/skin
10. Umbilical cord ties
11. Vitamin K (injectable)
12. Syringes and needles for administering vitamin K and required immunizations & treatments (e.g. antibiotics, etc if indicated)

13. Newborn feeding cups/nasogastric feeding tubes FG4 & FG6 (for those unable to directly breastfeed or unable to feed enough and need supplemental breastmilk with tube) (FG =French gauge)
14. Support binder for continuous skin-to-skin care (for babies eligible for KMC)
15. Diaper (nappy) and head covering for infant (supplied by hospital/mothers?)
16. Milk collection container with lid, for expressed breast milk
17. Alternate feeding utensils – cup, nasogastric tube, IV fluids, etc, as indicated

Other necessary requirements:

1. Overall water availability within health facility including maternal and newborn ward
2. Soap and clean running water for mother/health provider handwashing
3. Suitable cloth to wash mother breasts/or for use as warm compress (find out if supplied by hospital or family/mother?)
4. Graduated container for measuring expressed milk suited to newborn’s required milk intake
5. Infection prevention supplies/cleaning solutions/disinfectants for feeding cups, selective newborn supplies and also general unit/ward where babies/mothers are cared for

Newborn records and record keeping:

1. Recording form/register for newborn vitals, birth weight, ongoing condition, etc.
2. Newborn treatment sheet (e.g. tetracycline eye ointment, Vitamin K, other medication etc. and any referral sheet
3. Feeding chart/records for each newborn - breastmilk volume intake/alternative feeding method, frequency, sequential weight gain
4. Record of immunizations, antibiotics, IV fluid, etc.

3.3 Is the logistics system manual, or computer-based with appropriate software?

3.4 Does tracking of commodity logistics and delivery happen at all levels of the health system (national, regional, district, and other peripheral health facilities)?

3.5 If the system does not include essential commodities for newborns, please explain why.

3.6 Briefly describe the type of commodities that are prioritized for the following:

- Essential newborn care (list the commodities below)
- Care of the small baby (list commodities)
- Care of the sick baby (list commodities)

3.7 Are the following appropriate IV fluids included in the National Essential Medicines List (NEML) for the indication of management of sick and small newborns? (Tick if included)

10% Glucose

0.45 NaCl/5% glucose

0.18% NaCl/4% glucose

(NaCl: saline solution/sodium chloride)

3.8 Are there functional national or local systems in place to accurate forecasting and distribution of IV fluids and oxygen for the management of sick and small/LBW newborns in health facilities?

3.9 What are the main reasons for stock-outs of IV fluids and oxygen at national and sub-national levels in the last twelve months, if any?

Summarize the highest priority bottlenecks for ESSENTIAL MEDICAL PRODUCTS AND TECHNOLOGIES—NATIONAL AND DISTRICT LEVEL, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution

4. Health service delivery: National and district level

Desk review

4.10 At what level of care is inpatient appropriate care for sick and small babies recommended?

- First referral level (e.g., health center)?
- Second referral level (e.g., district hospital)?
- Tertiary level (e.g., central hospital)?

4.11 Are there sufficient or limited number of health facilities that provide appropriate care for sick and small newborns?

- What is the balance between urban and rural/remote areas?
- Are services available on a daily basis at facilities?

4.12 Are small babies referred for care at a specific level of health facilities? (e.g. central, district, or other level?)

National review (with MOH)

4.13 Describe the systems in place to promote the adherence to national standards and clinical protocols for care and feeding for sick and small newborns at the facility. For example:

- What quality improvement mechanisms are in place within standardized tools such as check lists for quality of inpatient care for sick and small babies?
- Do these health facilities conduct periodic reviews to ensure the provision of quality inpatient care for sick and small newborns? (Explain)
- What guidelines are available and used by staff to improve the quality of inpatient care services for all newborns, including SSNBs?

4.14 Are there other programs that support care of small and sick babies? (Provide details)

4.15 Are there other programs that aim to increase implementation of KMC? (Provide details)

4.16 What specific efforts are being taken to promote and monitor KMC in both public and private health care facilities?

Summarize the highest priority bottlenecks for HEALTH SERVICE DELIVERY—NATIONAL AND DISTRICT LEVEL, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution

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5. Health information systems: National level

Desk review

5.3 Describe the newborn and nutrition health related data collected by HMIS. Please indicate if the following data are included. For each indicator, please specify how the indicator is collected and how frequently it is collected (e.g., monthly, quarterly, etc.)

- Facility-based (early) neonatal mortality
- Disaggregated data by birth weight categories
- Proportion of all newborns who started breastfeeding within 1 hour of childbirth
- Proportion of all small newborns who start breastfeeding or have an alternate feeding method of providing breast milk, within 1 hour of birth
- Proportion of small newborns who are breastfed
- Proportion of small babies receiving breastmilk using an alternative feeding method :
 - Cup feeding
 - NG tube feeding/intragastric feeding
 - Other method of feeding (specify)
- Proportion of all newborns who receive skin-to-skin-to-skin care within 1 hour of birth
- Proportion of all small newborns who receive skin-to-skin care within 1 hour of birth
- Proportion of mothers counselled on exclusive breastfeeding upon discharge of hospital or health facility following birth

District review (with MOH)

5.4 Is information available on newborn care coverage for sick and small newborns? Yes/No

- What indicators are used to track the sick or small/LBW newborns that received extra care? Do these include the following:
 - Number of sick and small newborns hospitalized?
 - Recording temperature at specified intervals?
 - Recording breastfeeding/cup feeds/NG-Tube feeds – amounts/frequency?
 - Record of daily weight for small/LBW babies assessed?
 - Record of specific antibiotic/other treatments

- Other?/Specify

Summarize the highest priority bottlenecks for **HEALTH INFORMATION SYSTEMS—NATIONAL AND DISTRICT LEVEL**, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution

6. Family and community engagement: National and district level

District review (with MOH)

6.10 Describe any community engagement and/or capacity strengthening efforts to increase awareness of and demand for services related to breastfeeding and newborn care. Are there specific efforts focused on small and sick babies?

Summarize the highest priority bottlenecks for **COMMUNITY ENGAGEMENT—NATIONAL AND DISTRICT LEVEL**, and possible solutions to these challenges. Solutions should be feasible and evidence-based.

Bottleneck	Solution

After reviewing all bottlenecks for all categories from the desk review and discussions with MOH, select the 3-5 highest priority bottlenecks and describe the actions that can be taken to overcome them. Are these actions feasible? Who will be responsible? How will you know when the challenges have been overcome?

Bottleneck	Actions to achieve solutions