



Facilitated Referral for Newborns with Danger Signs:
The role of community health workers

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ABOUT THIS REPORT

From 2005-2011, the Bill & Melinda Gates Foundation funded the Saving Newborn Lives program (SNL) to test and implement newborn interventions in 18 countries. SNL has undertaken a series of secondary analyses to take stock of what was accomplished, identify lessons learned and share findings with the global health community. One aim was to examine approaches and lessons learned regarding access to care, care-seeking, and referral systems for newborns with danger signs in four countries where SNL supported early implementation and testing of community-based maternal and newborn programs within existing health systems. Findings from this analysis are presented in two separate, but linked, reports. This report focuses on the role of CHWs in referral, using the model of facilitated referral as a framework. Findings related to access to care and care-seeking for newborns are presented in a report entitled “Applying the three delays model: Improving access to care for newborns with danger signs” available at the Healthy Newborn Network: www.healthynewbornnetwork.org.

It should be noted that these analyses were based primarily on review of program documents and interviews with program staff to explore how programs were designed as well as some implementation issues; they were not meant to capture fidelity to program design.

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INTRODUCTION

Save the Children's Saving Newborn Lives (SNL) program seeks to achieve equitable and effective coverage of high impact services and practices for newborns. SNL serves as a catalyst for action by working with governments and partners to put newborn health on global and national agendas and by advocating for increased availability and access to routine and emergency newborn care services and supplies, improved quality of newborn care services, and increased knowledge about and demand for newborn care. SNL also works to develop, apply, document, and sustain packages of effective evidence-based newborn care services and practices at scale.

This report examines the role of community health workers (CHWs) in the identification and referral of newborns with danger signs in pilot areas of four countries where SNL supported community-based maternal and newborn care packages – **Malawi, Nepal, Bangladesh, and Uganda**. To evaluate and compare systems of referral of newborns to the nearest health facility, we adapt and apply the Gilroy and Winch definition of facilitated referral, originally used to assess interventions for management of children with signs of pneumonia or malaria by CHWs, (see Box 1). We also describe, based on available program data, the extent to which CHWs were able to identify and refer newborns.

Box 1: Components of facilitated referral

1. CHW promotes compliance with referral
2. Monitoring of referral
3. CHW addresses barriers to referral (geographic & financial)
4. CHW provides initial treatment prior to referral

Source: Winch PJ, Gilroy KE, Wolfheim C, Starbuck ES, Young MW, et al. (2005) *Intervention models for the management of children with signs of pneumonia or malaria by community health workers*. *Health Policy Plan* 20: 199-212.

BACKGROUND

Global neonatal mortality has fallen 28% since 1990 and now stands at 23 per 1,000 live births. Yet every year over 3 million babies die during the first month after birth, largely of preventable causes. Neonatal mortality accounts for 43% of all under-five deaths worldwide [1,2].

Many newborn deaths are due to complications of prematurity (35%) and neonatal infections such as pneumonia, sepsis, and meningitis (23%) [3]. In very high NMR settings, the percentage of newborns that die of neonatal infections is closer to 50% [1,4,5]. It is estimated that one-third of neonatal infections resulting in death are transmitted at the time of childbirth, with symptoms arising within 72 hours after birth [6]. Interventions to reduce the incidence and impact of neonatal infections and complications from prematurity and low birth weight exist [1,4,7]. However, interventions that can prevent death among newborns experiencing illness or other complications are only effective if they reach newborns when needed: the earlier that appropriate curative care can be given, the better the outcomes [7]. As such, the importance of timely identification of danger signs, and appropriate care-seeking and referral cannot be overstated.

Studies have shown that care-seeking for newborn danger signs increases with education, counseling and appropriate referrals; several large-scale trials have tested the feasibility of these interventions [8,9]. In 2009, UNICEF and the WHO released the “*Joint Statement on Home Visits for the Newborn Child: a strategy to improve newborn survival*” endorsing home visits to deliver newborn care [7]. It was informed by research studies that demonstrated home visits by CHWs improved neonatal survival, and it recommends home visits in the first 24 hours after home birth or as soon as possible after facility birth, along with visits on the 3rd and 7th days after birth. The statement recommends that home visits include counseling on newborn danger signs and identification of newborns in need of care. In addition, it recommends that families of newborns identified during home visits as having severe illness be assisted to seek care at a facility. Home treatment for local infections and some feeding problems may also be included in settings where access to facility care is limited.

Community-based programs that include home visits for mothers and newborns have now been endorsed in many countries [10], and implementation through existing health systems is being tested and even scaled up in some countries. The four programs examined in this report planned different systems and pathways for the identification and referral of newborns with danger signs, assigning roles and responsibilities to CHWs and arranging links between communities and facilities. This report will apply the facilitated referral model to assess the design of community-based systems to identify and refer newborns with danger signs.

METHODS

This review focused on program areas of four countries – Malawi, Nepal, Bangladesh and Uganda – where SNL supported testing and implementation of community-based maternal and newborn care programs and where SNL will continue to support Ministries of Health to scale up newborn survival programs.

Analysis

We undertook three analyses: 1) a cross-country comparison of the role of CHWs in promoting recognition of danger signs; 2) using the facilitated referral model, evaluation and comparison of systems of referral of newborns from the community to the nearest health facility; and 3) analysis of program evaluation data from household surveys, interviews with CHWs, and facility assessments on case detection and referral for newborns with danger signs.

We used two methods to document program approaches. First, we completed a desk review of relevant program documents including proposals and protocols, training materials and job aids, monitoring tools, and program reports (see Annex I for list of documents reviewed). We then consulted SNL country staff to fill in any information gaps. Program data sources included:

Data source	Malawi	Nepal	Bangladesh	Uganda
<i>Household surveys:</i> Number of women with live births interviewed at endline in intervention areas (Household survey)	900	615	398	894
<i>Interviews with CHWs:</i> Number of CHWs assessed	110	92	-	-
<i>Health facility assessment:</i> Number of health facilities assessed	22	-	-	-

Program description

Box 2 provides a brief description of each program and the implementation area supported by SNL. There were similarities across countries in terms of the package of interventions and delivery mechanisms. For example, all programs emphasized home visits by CHWs during pregnancy and the first week after delivery in line with the WHO/UNICEF Joint Statement.

Box 2. Overview of program and implementation area

- Malawi's **Community-Based Maternal Newborn Care (CBMNC)** initiative was a four-year (2007-2011) implementation research project conducted jointly with the Reproductive Health Unit of the Ministry of Health. The project aimed to develop and implement high impact interventions for mothers and newborns within a maternal, neonatal and child health (MNCH) framework and delivered through existing systems. The project was implemented in 22 health facility catchment areas of three districts (Chitipa, Dowa, and Thyolo) and covered approximately 711,000 people.
- Nepal's **Community-Based Newborn Care Package (CB-NCP)** pilot, developed by the Ministry of Health and Population with support from SNL and other partners, was introduced between 2008 and 2011 in 10 districts. The pilot study aimed to test a community-based newborn care package through the existing government service delivery system. The package components were based on the successful Morang Innovative Neonatal Intervention (MINI) study. SNL provided support for implementation and monitoring in Bardiya district, with a population of approximately 460,000.
- Bangladesh's **Community-Based Postnatal Care Study (CB-PNC)** was designed in partnership with the Ministry of Health in 2008 and the package was implemented from April 2009 to March 2010. The study aimed to compare the added package of interventions to the standard level of care in each region. The study covered a population of 400,000 across two geographically separate study regions, with different service delivery mechanisms – one through the government health system in partnership with the large scale National Nutrition Program and the other through the NGO BRAC's health service delivery platform in partnership with the government – and included comparison areas for each region.
- The **Uganda Newborn Study (UNEST)** was conducted in the Iganga-Mayugye Health and Demographic Surveillance Site over four years (2007-2011). The objective of UNEST was to investigate ways to improve newborn health and survival through community-based initiatives linked to health facility strengthening activities to improve quality of care. The study was a cluster randomized control trial with 31 intervention and 32 comparison clusters covering a population of 70,000 in the East-Central districts of Iganga and Mayugye.

Table I summarizes the characteristics of the CHW cadres. In Bangladesh, multiple cadres were engaged in delivering health services to women and were identified to conduct home visits for women and newborns as part of the community-based postnatal care study. Since implementation of the operations research study, the national nutrition program has been discontinued; therefore, community nutrition promoters are no longer available for providing community-based maternal and newborn care. In Uganda, Ministry of Health guidelines were used to select community workers (who work in Village Health Teams or VHTs) because a VHT policy existed, but VHTs have not yet been trained in intervention areas.

With the exception of Malawi, CHWs are selected from within the communities they serve. CHWs in all countries were given some remuneration: government paid salaries in Malawi and Bangladesh (FWA/HA), stipends in Uganda and Bangladesh (CNPs), and performance-based incentives in Nepal and Bangladesh (BRAC CHWs).

Table I. CHW characteristics and training in intervention areas

Characteristics	Malawi	Nepal	Bangladesh – GOV'T	Bangladesh – BRAC	Uganda
Name	Health Surveillance Assistant (HSA)	Female Community Health Volunteer (FCHV)	Family Welfare Assistant (FWA); Health Assistant (HA) – female only; Community Nutrition Promoter (CNP)	Shastho Kormi (SK)	Village Health Team (VHT) member
Community Health Worker Selection/ Recruitment	Centrally recruited through district health teams and assigned a catchment area	Volunteers selected by community mother groups.	FWA, HAs: Recruited from community under MOH&FW CNPs: Recruited from community under Nutrition Program	SKs: Recruited by BRAC	Nominated by community, selected in cooperation with project staff
Education level	12 years	Primary education preferred	FWA and HAs: Secondary education CNPs: Grade 8	Secondary education	Literate
Pre-service (basic) training	60 days (12 weeks)	18 days	FWAs: 21 days HAs: 21 days CNPs: 24 days	18 days	None †
In-service training on maternal and newborn health	9 days (+6 days community mobilization)	7 days	5 days	Monthly community MN package refresher	6 days†
Remuneration and/or incentives	Government salaried	Volunteer - stipends for meeting attendance and performance based incentive	FWA/HAs: Government salaried CNPs: Volunteer (paid a stipend)	Salaried by NGO with incentive payments for program MNCH visits	Volunteer with stipend for attending monthly meetings

† At the start of the UNEST study, the VHT program had not been rolled out to intervention areas. VHTs were recruited using MOH guidelines and received 6 days training on maternal and newborn care. Since that time, the VHT pre-service training has been designed to include newborn care.

Overview of facilitated referral model

Gilroy and Winch [11,12] developed a definition of facilitated referral from community to facility to characterize different interventions for management of childhood illness. They outline three compulsory components of facilitated referral (promotion of compliance with referral, monitoring referral, and addressing referral barriers) and one context-specific component (provision of pre-referral treatment). Each component requires several actions; the model specifies that a CHW has successfully facilitated a referral when they have performed all actions related to compliance and monitoring (Components 1 and 2) and at least one action to overcome barriers (Component 3). The fourth intervention component—initiation of treatment at community level—is not included in the criteria for facilitated referral. We adapted this model and applied it as a framework to assess the strength of referral systems from the community to first level facilities for newborns with danger signs (see Table 2).

Table 2. Facilitated referral model adapted for newborns with danger signs

Component	Possible Actions	Criteria
Component One: CHW promotes compliance with referral	1) CHW counsels families about why referral is necessary and promotes compliance with referral. 2) CHW fills out a referral slip and gives it to the child's caregiver.	Both actions required
Component Two: Monitoring of referral	1) CHW records all referred cases in a register. 2) After examining and treating the newborn at a health facility, health worker ensures that CHW has been formally notified that the patient has been discharged so they can commence follow-up at home and in community (<i>counter-referral</i>). 3) Both referral and counter-referral are tracked in a health information system, and the outcome of the referral is discussed in supervisory visits of monthly meetings.	All three actions required
Component Three: CHW addresses such barriers to referral as geographic and financial access	1) CHW inquires about barriers to referral and works with the family to address them. 2) CHW has access to or can inform the family about a source of money at the community level to provide or lend funds that enable the family to seek care from a health facility. 3) CHW has access to or can inform the family about a source of emergency transport at the community level. 4) CHW accompanies the family to the health facility to ensure they receive immediate care.	At least one action required
Component Four: CHW provides initial treatment prior to referral (optional and circumstantial)	1) CHW may provide an initial dose of antibiotics, prior to referral, to newborns with danger signs as per protocol. 2) CHW may provide counseling on care during transport, such as breastfeeding and thermal care.	May be performed where delays to initiate treatment exist

Adapted from: Winch PJ, Gilroy KE, Wolfheim C, Starbuck ES, Young MVW, et al. (2005) Intervention models for the management of children with signs of pneumonia or malaria by community health workers. Health Policy Plan 20: 199-212.

FINDINGS

Role of CHWs in identification of newborns with danger signs

All programs trained CHWs to conduct home visits during pregnancy and in the first week after birth. CHWs were trained to counsel mothers on newborn danger signs and the importance of seeking care, as well as to assess newborns for danger signs. CHWs were trained to assess the presence of newborn danger signs by both asking the mother if the newborns had any danger signs and by examining the newborn (visually and physically). Table 3 provides an overview of the home visit schedule, the newborn danger signs CHWs were trained to detect, equipment given to CHWs to aid detection of danger signs, and messages on care-seeking. Only the CB-NCP program in Nepal encouraged families to seek care from the CHW if they noticed any danger signs and the CHW was able to provide an initial dose of oral antibiotic. Other programs promoted health facilities as the first point of care.

The set of newborn danger signs that CHWs were trained to counsel on and screen for during home visits varied, but primarily addressed the nine signs identified in the WHO-UNICEF algorithm [13] (see Box 3) plus low birth weight. The UNEST study in Uganda trained CHWs in the assessment and counseling of all nine signs; programs in Malawi, Bangladesh and Nepal did not specify the identification of jaundice and Nepal also did not include convulsions. In addition to newborn danger signs, all programs trained CHWs to assess weight and refer low birth weight (LBW) babies.

The extent of training on newborn danger signs was limited in most programs and opportunities to practice the skills were almost non-existent. Only training programs in Nepal and Uganda included an assessment during training of CHW knowledge of newborn danger signs and their skills in screening newborns.

In terms of equipment provided to CHWs for screening newborns, all programs intended to provide thermometers to detect fever and timers for counting respiratory rates. However, some programs faced equipment supply issues; CHWs in the UNEST study did not receive timers or thermometers and some CHWs in Malawi did not receive timers due to procurement problems within UNICEF.

Box 3. WHO-UNICEF list of newborn danger signs that can be detected by CHWs with appropriate training and equipment

1. Not feeding since birth or stopped feeding
 2. Convulsions
 3. Respiratory rate of 60 or more
 4. Severe chest in-drawing
 5. Temperature ≥ 37.5 C
 6. Temperature ≤ 35.5 C
 7. Only moves when stimulated, or not even when stimulated
 8. Yellow soles (sign of jaundice)
- Signs of local infection:*
9. Umbilicus red or draining pus, skin boils, or eyes draining pus

Source: WHO, UNICEF (2012) Caring for the Newborn at Home: A training course for community health workers: Community Health Worker Manual. Geneva [13]. This list was adapted from one developed by the Young Infant Clinical Signs Study group [14].



Table 3. Aspects of case detection by CHWs across studies

	Malawi CBMNC	Nepal CB-NCP	Bangladesh CB-PNC	Uganda UNEST
<i>Schedule for pregnancy home visits</i>	3 (1 st , 2 nd & 3 rd trimester)	4 (no specified timing)	2 (2 nd & 3 rd trimester)	2 (early as possible & 3 rd trimester)
<i>Schedule for post-natal home visits</i>	Day 1 (home births), 3, 8	Day 1, 3, 7, 28	GOV–Day 1, 2-3, 4-7 BRAC– Day 1,3, 7, 28	Day 1, 3,7
<i>Newborn danger signs CHWs were trained to counsel on and assess*</i>	<ul style="list-style-type: none"> • Difficult breathing • Cold or fever • Red cord stump with pus • Eye discharge • Not feeding properly • Convulsions • Difficult to wake up • LBW 	<ul style="list-style-type: none"> • Fast breathing (60 or more)/Severe chest in-drawing • Hypothermia • Fever • Umbilical pus/discharge • Unable to breastfeed • Unconsciousness/lethargy/less movement • LBW 	<ul style="list-style-type: none"> • Rapid breathing/chest in-drawing • Fever/Low body temperature • Infection of umbilical stump • Unable to suck or difficulty in feeding • Convulsion • Lethargy • LBW 	<ul style="list-style-type: none"> • Difficult breathing, chest in-drawing • Too hot or too cold • Red/pus cord • Eye discharge • Not feeding well • Diarrhea • Convulsions • Weak baby • LBW (foot-size) • Skin rashes with pus or fluid • Crying excessively • Yellow eyes and skin
<i>Extent of training on danger signs</i> • Length of time • Clinical Practice • Assessment of competencies	<ul style="list-style-type: none"> • Unspecified time reviewing danger signs • No clinical practice • Not assessed during training 	<ul style="list-style-type: none"> • 1 hr: reviewing danger signs • 3 hrs: management of NB infections • Observed assessing signs in babies/dolls • Assessed with drill exercises, case studies, and role play 	<ul style="list-style-type: none"> • 1 hr: reviewing danger signs • 1 hr: LBW • No clinical practice • Assessed on use of ARI timer, thermometer and scale 	<ul style="list-style-type: none"> • 1.5 hrs reviewing danger signs • No clinical practice • Assessed by direct observation during supervision visits
<i>Equipment for case detection</i>	Timer [†] , thermometer, infant scale	Timer, thermometer, infant scale, bag & mask	Timer, thermometer, infant scale	Foot size card
<i>Messaging on care-seeking</i>	“Seek care immediately from nearest health facility if newborn experiences danger sign”	“Seek care from FCHV immediately if newborn experiences danger signs; follow FCHV referral advice”	“Seek care at the nearest health facility if you see any one of the danger signs and/or call CHW.”**	“Always seek care at a health facility near you if your baby develops any of these danger signs”

* Exact wording on danger signs drawn from training materials.

† Timers provided by UNICEF, but not all HSAs received timers.

**In Bangladesh, CHWs put a poster with danger signs in the home and recorded the CHW’s phone number on the poster or a card that is left with the family.

Evaluation of referral systems using the facilitated referral model

The first component of facilitated referral emphasizes the role of CHWs in promoting compliance with referral by counseling families on why timely referral is important and by filling out a referral slip or form and giving a copy to the primary caregiver to take with them to the nearest health facility. The matrix below shows that all programs trained CHWs to provide counseling on referral compliance and most programs provided CHWs with referral slips to give the mother, with the exception of Malawi and implementation areas using the government system in Bangladesh. (Note: referrals slips are mentioned in the Malawi CHW training manual, but were not implemented.)

Component I: CHW promotes compliance with referral – both actions required				
Actions	Malawi CBMNC	Nepal CB-NCP	Bangladesh CB-PNC	Uganda UNEST
Counseling on Referral Compliance	Yes	Yes	Yes	Yes
Provision of a Referral Slip	No	Yes	Yes (Only BRAC areas)	Yes
Meets criteria for Component One	No	Yes	Yes	Yes

The second component of facilitated referral is the monitoring of referrals. All programs established a system to record CHW referrals in a register so referrals could be tracked by both facility-based staff and CHWs. Uganda and Nepal established protocols for a formal counter-referral system where the health worker informed the CHW of the outcome of the referral and follow-up action required of the CHW. This counter-referral could occur using several types of notification, including written, face-to-face, or via cell phones. The Uganda CHW referral form included a feedback section from the health facility to the CHW to report on treatment, outcomes and follow-up needed (see Annex 2). Only Uganda established a system for recording both referrals and counter-referrals and used referral data recorded in the CHW logbook during supervision visits.

Tracking data should include not only tallying the number of referrals and counter-referrals, but also looking at patterns within the data to improve the use and efficiency of referral systems. An evaluation of the actual use of referral data was beyond the scope of this analysis of program design, but use of data to monitor and improve referral systems was likely hindered by the limited amount of data collected.

Though not included in the definition of facilitated referral, regular follow-up of referred newborns can be encouraged to ensure referral compliance as well as compliance with treatment or care instructions given at the facility. CHWs in Uganda and Nepal were encouraged to conduct follow-up of referred cases. In Uganda, CHWs were instructed to follow-up (within 24 hours) to confirm both whether the family had complied with the referral and if the service was received at the health facility. In Nepal, FCHVs were trained to visit the referred baby three days after referral to observe their health status and counsel mothers on special care of their baby.

Component 2: Monitoring of referral – all three actions required				
Actions	Malawi CBMNC	Nepal CB-NCP	Bangladesh CB-PNC	Uganda UNEST
Records Referral in Register	Yes	Yes	Yes (Only BRAC areas)	Yes
Counter-referral from Health Facility to CHW	No	Yes	No	Yes
Tracking and supervision	No	No	No	Yes
Meets criteria for Component Two	No	No	No	Yes

The third component of facilitated referral addresses the role of CHWs in mediating the barriers that affect compliance with referral. Programs in Nepal, Bangladesh and Uganda all encouraged CHWs to identify barriers with families, to discuss emergency transport options, and to accompany referred newborns to the health facility as a way of improving referral compliance. In Malawi, counseling focused on barriers to reaching care at the time of birth, but did not emphasize barriers to reaching care for newborns with danger signs; accompanying referred newborns to facilities was not included in part due to the distances to appropriate care, since newborns can only be treated at district level hospitals. UNEST in Uganda was the only program that trained CHWs to explicitly discuss with caregivers saving funds for transport and treatment of sick newborns.

Component 3: CHW addresses such barriers to referral as geographic and financial access – at least one action required				
Actions	Malawi CBMNC	Nepal CB-NCP	Bangladesh CB-PNC	Uganda UNEST
Identify barriers	No	Yes	Yes (Only BRAC areas)	Yes
Discuss funds for transport and treatment of sick newborns	No	No	No	Yes
Discuss emergency transport	No	Yes	Yes (Only BRAC areas)	Yes
Accompany to facility	No	Yes	Yes	Yes
Meets criteria for Component Three	No	Yes	Yes	Yes

The fourth component of facilitated referral covers treatment and is not required, since treatment in the community may not be appropriate in all settings. However, we have adapted the definition to include counseling

on appropriate care for the newborn during transport, which all CHWs giving referrals should be able to do. All four programs included counseling on care during transport, such as the importance of thermal care and continuing to breastfeed. Only the CB-NCP program in Nepal included training and equipping community health workers to provide a pre-referral dose of Cotrimoxazole to newborns with signs of possible severe infection.

Component 4: CHW provides initial treatment prior to referral (optional)				
Actions	Malawi CBMNC	Nepal CB-NCP	Bangladesh CB-PNC	Uganda UNEST
Provide initial pre-referral treatment	No	Yes	No	No
Provide counseling on appropriate care during transport	Yes	Yes	Yes (Only BRAC areas)	Yes
Meets criteria for Component Four	Yes	Yes	Yes	Yes

The criteria for the four components of facilitated referral are summarized in Table 4. Only the program in Uganda met all the criteria required for facilitated referral. Nepal and Bangladesh would meet the criteria if monitoring was strengthened. Malawi would need to introduce referral slips, strengthen monitoring, and take at least one step to address barriers to reaching facilities in order to meet the criteria for facilitated referral.

Table 4. Evaluation of referrals systems using criteria for facilitated referral

Component	Possible Actions	Malawi CBMNC	Nepal CB-NCP	Bangladesh CB-PNC	Uganda UNEST
1. CHW promotes compliance with referral	1) CHW promotes compliance with referral	✓	✓	✓	✓
	2) CHW fills out a referral slip		✓	✓	✓
2. Monitoring of referral	1) CHW records referred cases	✓	✓	✓	✓
	2) Counter-referral from health facility to CHW		✓		✓
	3) Referral and counter-referrals tracked, and outcome discussed in supervisory visits				✓
3. CHW addresses barriers to referral	1) CHW addresses barriers to referral		✓	✓	✓
	2) CHW has access to or can inform about a source of money for transport				✓
	3) CHW has access to or can inform about a source of emergency transport		✓	✓	✓
	4) CHW accompanies family to facility		✓	✓	✓
4. CHW provides initial treatment	1) CHW may provide initial dose of antibiotics prior to referral		✓		
	2) CHW provides counseling on care during transport	✓	✓	✓	✓
Meets definition of facilitated referral		No	No	No	Yes

CHWs' ability to identify and refer newborns with danger signs

Coverage of home visits by CHWs: The ability of CHWs to counsel families on prompt recognition of danger signs and care-seeking depends on the number of families they can reach – before or after the birth. The number of interviewed women that received home visits (at least one) during pregnancy was quite high across countries, with the exception of Malawi (90% in Bangladesh, 97% in Nepal, 68% Uganda, and 37% Malawi), meaning most women should have heard messages on danger signs and care-seeking at least once. The ability of CHWs to identify newborns with signs of illness depends on the number of babies reached during postnatal visits, with visits during the first week after birth being particularly important as most newborns die within this timeframe. The number of mothers and newborns that received a visit within the first week after birth was lower than the number of women that received a visit during pregnancy (64% in Bangladesh, 62% in Nepal, 63% in Uganda, and 17% in

Malawi). In all countries, many newborns were not reached during the first week after birth so any danger signs those newborns experienced would not have been detected by the CHW.

CHW knowledge of newborn danger signs: Data from CHW assessments in Malawi and Nepal indicate good knowledge of newborn danger signs and care for newborn complications. In Malawi, 96% of 110 interviewed HSAs could name at least three newborn danger signs; the most commonly cited signs were fever (69%), poor or not breastfeeding (53%) and restlessness (46%). While two-thirds of HSAs interviewed were aware of appropriate actions to take with LBW babies, only 38% mentioned follow-up care in the form of monitoring the baby's weight gain and feeding and only 10% were able to cite the three birth weight classifications. In Nepal, 98% of 92 interviewed FCHVs could name least 5 newborn danger signs; the three most commonly cited signs were hypothermia (100%), fever (99%) and unable to suck (99%). The majority of FCHVs (97%) could also state the correct dose of Cotrimoxazole for a newborn (half tablet twice a day for 5 days). Most FCHVs (90%) could correctly identify all three birth weight classifications and 84% could name two key ways to manage low birth weight babies (skin-to-skin contact and frequent breastfeeding).

Availability of equipment and supplies: Data from CHW assessments in Malawi and Nepal indicate there may be issues with lack of supplies or equipment for screening newborns for danger signs and low birth weight. Many HSAs (68%) did not have a timer and 15% did not have a functional thermometer. Although most FCHVs interviewed in Nepal reported having functional thermometers (98%), timers (94%), scales (99%), and job aids such as counseling cards (96%), they listed "equipment not available" in the top five challenges they encountered in the implementation of CB-NCP.

Volume of CHW referrals: Data from HSA register reviews and interviews with health facility staff in Malawi indicated low volume of CHW referrals for newborns with danger signs. While staff from all 22 facilities included in the assessment reported receiving newborn referrals from HSAs, only 64% reported receiving at least one HSA referral in the previous 30 days. Registers for 110 interviewed HSAs showed only 8% had referred at least one newborn for suspected infection and only 11% had referred at least one newborn for LBW in the previous three months.

DISCUSSION AND RECOMMENDATIONS

This analysis of the role of CHWs in case detection and referral within community-based programs in Malawi, Uganda, Nepal and Bangladesh highlights lessons that can inform future programming. Applying the Gilroy and Winch facilitated referral model to referrals for newborns is a helpful lens to identify strengths and weaknesses in program design. The role of CHWs in identifying, referring, and following up on sick newborns needs to be critically examined for effective programming at scale.

- **Appropriate expectations for the role of CHWs in identification and referral:** There is evidence from studies of other community-based programs that counseling families on newborn danger signs and available services can lead to a rapid upswing in family initiated-referrals [15]. Focusing on increasing family-initiated care-seeking may be more important than detection by CHWs. Per recommendations in the Joint Statement, community-based packages are likely to include home visits for newborns during the first week after birth. However, danger signs may occur throughout the neonatal period, so it is critical that families know how to recognize when care is needed. Furthermore, the number of newborns that will receive postnatal home visits by CHWs within the first week will depend on system constraints and will be especially difficult in settings where there are CHW shortages or CHWs are assigned multiple tasks or cover large catchment areas. The programs examined in this analysis varied in the number of newborns reached soon after birth, and in all countries there are many newborns missed. Programs need to consider how much to rely on CHW case detection and referral given the local context and to decide the appropriate role of CHWs in supporting care-seeking and strengthening links between communities and facilities.

- **Strengthen monitoring of referrals and supervision:** This component was weakly addressed in most countries and prevented Nepal and Bangladesh from meeting the criteria for facilitated referral. Implementation was focused on testing the feasibility of the packages, with less attention paid to tracking referrals. There is now need for more data to explore how well systems are functioning and more information on whether collected data are actually used for tracking referrals and for making decisions to improve programs.
- **Stronger training packages and reinforcement of knowledge and skills for CHWs:** A review of the training and supervision materials revealed gaps in development, assessment and reinforcement of competencies. Danger signs may be difficult to recognize, and may be rare, so training programs should ideally include clinical practice on the identification of newborn danger signs, and management where applicable, as well as assessment of skills. Further, supervision needs to include assessment and reinforcement of knowledge and skills. Approaches to strengthen capacity of health workers at community level providing large scale integrated community case management (iCCM) of childhood illness programs in similar settings could be informative.
- **Examine role of CHW in follow-up and treatment completion:** Only two countries – Nepal and Uganda –trained CHWs to do follow up visits for referred newborns. Follow-up is likely to be important to ensure referral compliance and treatment adherence. Unlike many childhood illnesses, newborn illnesses often require long periods of treatment. Low birth weight babies need frequent monitoring and support and newborns with sepsis need repeated injections. CHWs could play a role in helping families comply with these difficult treatment regimens. Although we see that many programs are not reaching all mothers and newborns with postnatal visits, it may be feasible and more effective to involve CHWs in follow-up of sick newborns since the number of newborns requiring follow up at any given time is likely to be small.

ANNEX I: Documents Reviewed

	Report Type	Malawi	Nepal	Bangladesh	Uganda
List of Documents Reviewed	Proposal and Planning Documents	<ul style="list-style-type: none"> Community-based Maternal Newborn Care Programme: Full Proposal – Sept 2007 	<ul style="list-style-type: none"> Eight Pilot districts of Community Based Newborn Care Program (CB-NCP): Monitoring and Evaluation Plan – Aug 2009 	<ul style="list-style-type: none"> Community Based Postnatal Care Package: Designing an Effectiveness Trial in Bangladesh – Oct 2007 	<ul style="list-style-type: none"> Improving Newborn Health and Survival in Uganda Through a Community Based Intervention Linked to Health Facilities: Full Proposal – Nov 2007
	Baseline and Endline Reports	<ul style="list-style-type: none"> Community Based Maternal and Newborn Care in Three Districts of Malawi. Household Survey Findings : Baseline and Endline – Jan 2012 	<ul style="list-style-type: none"> A Baseline Survey on Community Based Newborn Care Package in Two Districts in Rural Nepal – April 2009 Baseline & Endline Survey Results - Comparative Report. Community Based Newborn Care Programme: Bardiya district – Aug 2011 	<ul style="list-style-type: none"> Baseline PNC Household Report – Dec 2008 Household Survey Report – Baseline and Endline Findings – Aug 2011 	<ul style="list-style-type: none"> The Uganda Newborn Survival Study: A Draft Report of Formative Research Findings in Eastern Uganda – Nov 2009 The Uganda Newborn Study Endline Report – June 2012
	End of Study and End of Project Reports	<ul style="list-style-type: none"> Community Based Maternal and Newborn Care Program: End of Study Report (Draft) – Dec 2011 Malawi Newborn Health Program – End of Program Report (Draft) – Oct 2011 	<ul style="list-style-type: none"> End of Project Report Nepal – Dec 2011 Assessment of the Community-Based Newborn Care Package in Nepal – July 2012 	<ul style="list-style-type: none"> Documentation of SNL Research: PNC OR and PNC Expansion. End of Study Report: “Community based PNC study in Bangladesh” – April 2011 End of Country Program Report Bangladesh – September 2011 	<ul style="list-style-type: none"> Saving Newborn Lives End of Country Program Report Outline - Uganda
	Training Materials and Job Aids	<ul style="list-style-type: none"> Trainers Manual in Integrated Maternal and Neonatal Care 	<ul style="list-style-type: none"> MINI training materials – FCHV Training Facilitators Guide 	<ul style="list-style-type: none"> Community worker manual for maternal and newborn care 	<ul style="list-style-type: none"> Trainers Manual for Community-Based Newborn Care
	Other Reports	<ul style="list-style-type: none"> Malawi Health Services Assessment Findings – Jan 2012 	<ul style="list-style-type: none"> CB-NCP After Training Follow-up Report: Competency of Service Provider and Peripheral Health Facility to Deliver the Newborn Care 	<ul style="list-style-type: none"> Assessing the quality of community based postnatal care in Bangladesh – Aug 2010 	<ul style="list-style-type: none"> Improving Newborn Survival: Experiences from the Integration of Community Health Workers in Service Delivery in Uganda

ANNEX 2: Sample referral form

UNEST CHW referral form (Uganda)

Community Health Worker Referral Form



Name (Pregnant woman/Mother/Newborn): _____ Date: _____

Age: _____ Parish (Muluka) : _____

Sex: _____ (M/F) _____

Village (LC1 Zone) : _____ Sub County (Gombolola) : _____

Reason for referral (Danger sign)

Pregnant woman/Mother: _____ Name of community health worker referring

Newborn: _____

Feedback from Health facility to CHW

Name (Pregnant woman/Mother/Newborn): _____ Date: _____

Name of health facility: _____

Name of service provider: _____

Follow up actions for community health worker

Danger signs in woman/mother

- Continuous vomiting - CV
- Fits or convulsions - FC
- Vaginal bleeding - VB
- Foul smelling discharge from the vagina - VD
- Fever or feeling hot - FE
- Severe headache/feeling dizziness - SHD
- Swollen feet, hands or face - SHF
- Looking pale and always weak - PW
- Severe abdominal pain - SAP
- Leakage of urine or faeces from the vagina - LUF

Danger signs in newborn

1. Problems with breathing
2. Very weak Baby (not moving when stimulated)
3. Baby fails or is unable to breastfeed
4. Feeling very cold or hot
5. Dirty cord stump with pus or reddening
6. Eye discharge
7. Diarrhea
8. Convulsions
9. Skin rashes with pus or fluid
10. Baby cries excessively
11. Yellow eyes and skin (first 24 hours after delivery/ accompanying another illness)
12. Very small babies

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