



Save the Children®

Lufwanyama Integrated Neonatal and Child Health Project in Zambia (LINCHPIN)

Lufwanyama District, Copperbelt Province, Zambia

First Year Annual Report *1st October 2009-30th September 2010*

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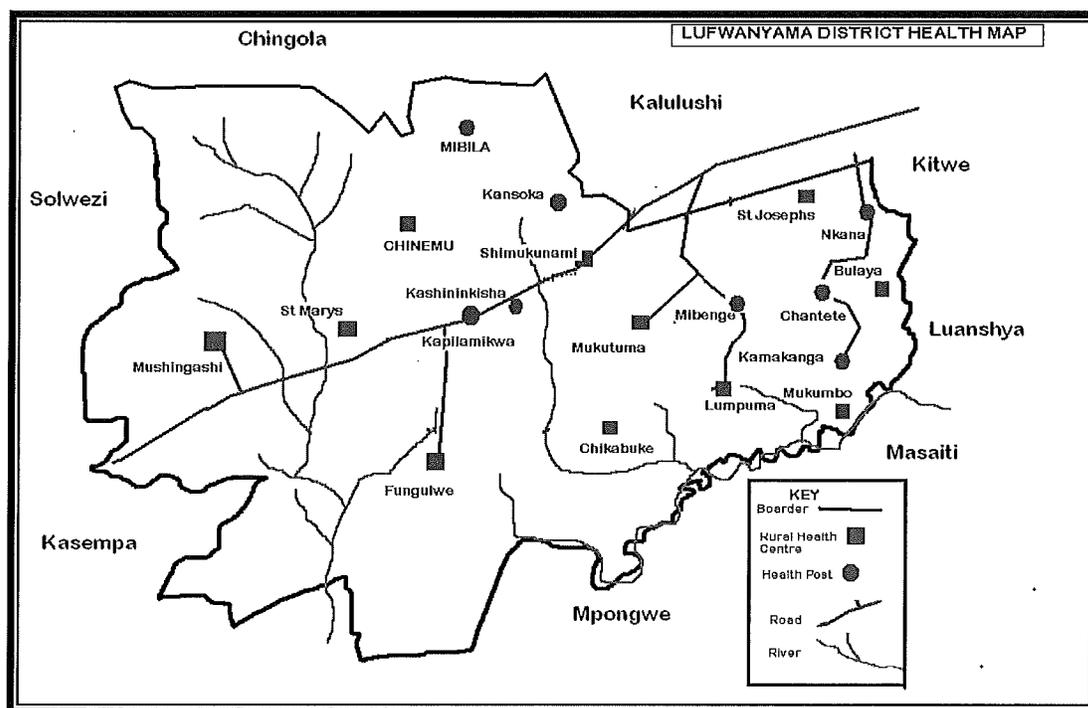
Acronyms and Terms

ARIs	Acute Respiratory Infections
BCC	Behavior Change Communication
BU	Boston University
CCM	Community Case Management
CHW	Community Health Worker
CS	Child Survival
C-IMCI	Community-based Integrated Management of Childhood Illnesses
CSHGP	Child Survival and Health Grant Program (USAID)
DHMT	District Health Management Team
DHO	District Health Office
DIP	Detailed Implementation Plan
ENC	Essential Newborn Care
ICCM	Integrated Community Case Management
IR	Intermediate Result
LINCHPIN	Lufwanyama Integrated Newborn and Child Health Project in Zambia
M&E	Monitoring and Evaluation
MCHIP	Maternal and Child Health Integrated Health Project (USAID)
MOH	Ministry of Health
MOU	Memorandum of Understanding
NGO	Non Governmental Organization
NHC	Neighborhood Health Committee
OR	Operations Research
PMO	Provincial Medical Officer
PNC	Postnatal Care
RDT	Rapid Diagnostic Tests
TBA	Traditional Birth Attendants
TDRC	Tropical Disease Research Centre
TWG	Technical Working Group
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Introduction

In Zambia 100,000 children die every year before reaching their fifth birthdays, 40 percent of these deaths occur in the first month of life as the result of treatable conditions, often untreated. Save the Children was awarded a five-year USAID/CSHGP Child Survival Project (CS-25) - *Lufwanyama Integrated Newborn and Child Health Project (LINCHPIN)* - to address four of the main causes of child death in Zambia: newborn conditions, pneumonia, malaria, and diarrhea. The goal of the project is to decrease the under-five mortality in Lufwanyama District by increasing the use of life-saving interventions through delivery channels that are accessible, available, high quality, demanded and supported. LINCHPIN interventions include: maternal and newborn care (40%); pneumonia case management (20%); prevention and treatment of malaria (20%); and control of diarrheal disease (20%). Our strategy is an integrated, community-based newborn care and community case management (CCM) package delivered through an enhanced district-wide community health program linked to health facilities and consistent with Ministry of Health (MOH) plans and policies.

Figure 1: Map of Lufwanyama District, Copperbelt Province



LINCHPIN is a catalytic five-year Innovation Category project being implemented in collaboration with the District Health Management Team (DHMT) in Lufwanyama District (12°46'S 27°32'E) in Zambia's Copperbelt Province. The total population of Lufwanyama District is 85,033 (2010 official government projection extrapolated from 2000 census) with 15,136 (17.8 percent) children under five years old and 18,537 (21.8 percent) women of reproductive age.

LINCHPIN has four intermediate results (IRs): **IR-1:** Increased access to and availability of services, **IR-2:** Improved quality of services, **IR-3:** Increased demand for services and health

practices, and **IR-4: Enabled environment**. The major corresponding strategies are: (1) community-based providers (TBAs and CHWs) delivering antenatal, newborn, and post-natal care (PNC) and community case management (CCM) and facilitated referral; (2) competency-based CHW and TBA training; (3) reliable supply of drugs and equipment; (4) systematic supervision; (5) health facility staff trained or retrained in all intervention packages; (6) NHCs supported to expect and request high quality services; (7) Health facility staff and NHCs promoting key practices, danger sign recognition, and appropriate care-seeking, other locally appropriate behavior change channels and enhanced community capacity, (8) program learning; and (9) MOH policies and strategies favoring CCM in place at the national level (*see figure below*).

The USAID CSHGP Innovation category cooperative agreement is for five years, from 1 October, 2009, to September, 2014. The CSHGP award is matched by funds from the ELMA Philanthropies, Towers and Perrin, and other donors. This Year I Annual Report covers the first year of USAID/CSHGP-funded LINCHPIN program activities implemented from 1 October, 2009, through September 30, 2010.

A. Key Progress and Major Accomplishments

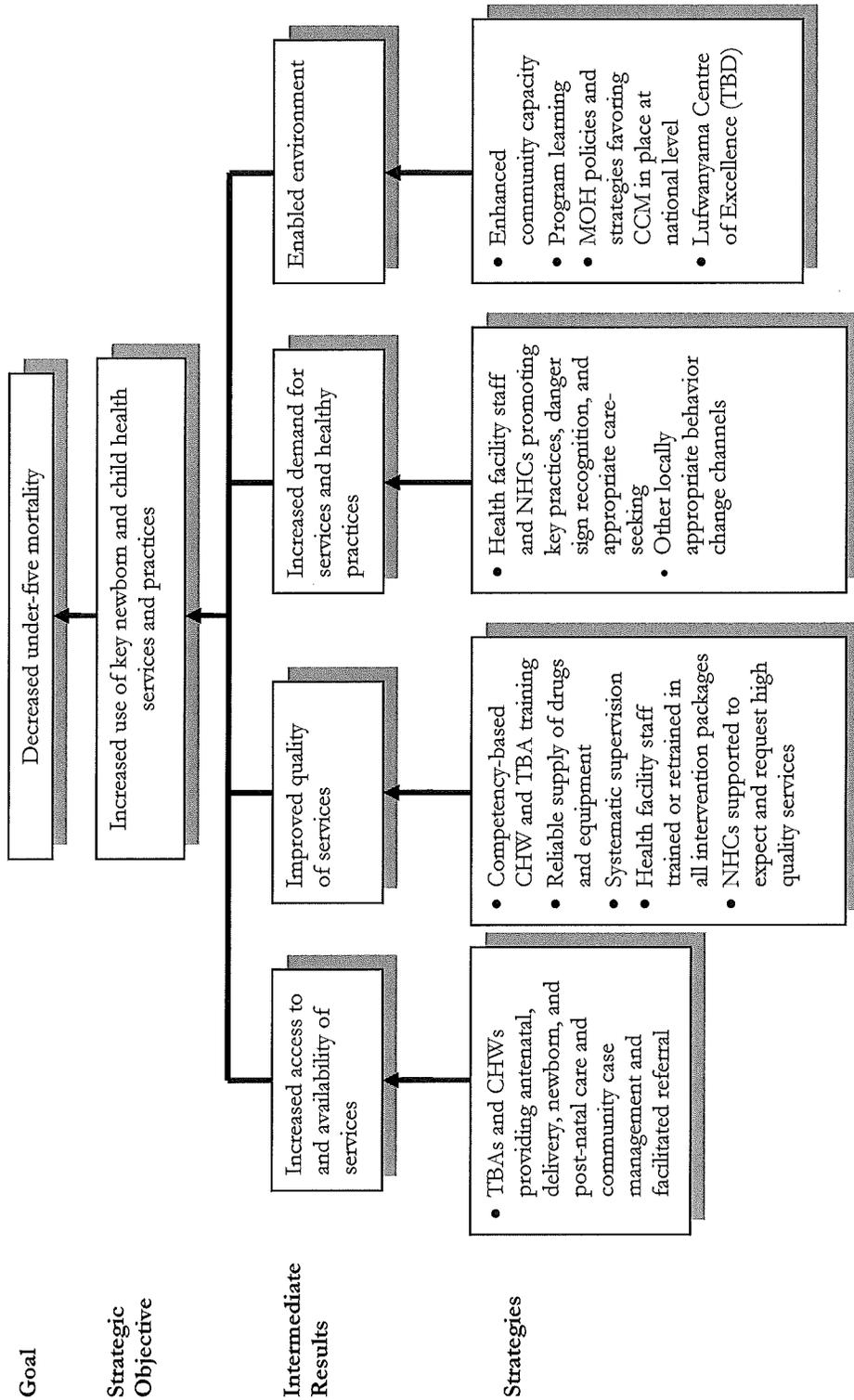
Save the Children is pleased to report that, partially due to its advocacy and supportive presence in Lufwanyama District, the MOH included Lufwanyama as the twelfth district in the initial national roll-out of CCM in Zambia. This was a major accomplishment and one that will benefit the children of this isolated and under-resourced district.

Project activities in the first year included: 1) recruitment and orientation of program staff, project briefings and awareness creation meetings; 2) collaboration and partnership with key project partners; 3) review of MOH policies, child survival (CS) strategies, 4) conduction of baseline surveys and Detailed Implementation Plan (DIP) workshop, (5) DIP submission and review; 6) policy dialogue and networking on CS interventions, especially CCM; 7) capacity building for health workers, CHWs, TBAs and the LINCHPIN project staff; and 8) negotiation and signing of the project agreement/MoU with key partners.

Project start up Once key LINCHPIN team members were in place, all received an orientation on the project details, including DIP guidelines. The initial Program Manager resigned to begin another job in March, 2010. The new Program Manger began on June 7, 2010.

The LINCHPIN team reviewed MOH child survival policies and strategies. Project briefings were held with key partners to enhance collaboration, joint planning, team building, networking, and advocacy. Project orientation meetings were held with key national level stakeholders, including WHO, UNICEF, key department heads from the MOH and the Maternal and Child Health Unit.

Figure 2: LINCHPIN Results Framework



Baseline survey, health facility assessment and qualitative research In partnership with Boston University (BU) and the Tropical Disease Research Center (TDRC) in Ndola, the baseline survey, health facility and formative research were conducted during the first year of the project. The comprehensive baseline evaluations were designed to inform the strategy, refine targets, and measure baseline indicators for impact assessment at the end of the project.

Baseline household survey The baseline assessment evaluated selected households for knowledge, availability and use of neonatal and child survival interventions. The study instrument was adapted from the *KPC 2000* questionnaire, including Rapid CATCH Indicators. The information collected included mother's knowledge about neonatal and child illnesses, recent illnesses of children, actions taken during the illness including type and source of treatment, use of antenatal, delivery, neonatal and child health services, and barriers to accessing health services and interventions. The results showed that, timely treatment of malaria (12%) and pneumonia (13%) is very low. However, the coverage of preventive interventions, like exclusive breastfeeding (82%), vitamin A supplementation (89%), and measles immunization (85%), is high. The reasons for the different use of preventive vs. curative interventions are multi-factorial. Preventive interventions are delivered at facilities and through scheduled outreach clinics. Curative interventions, on the other hand, are only available at health facilities where they should ideally be continuously available because children fall ill unpredictably and can die quickly. Challenges to accessing case management for a sick child include distance to health facilities, unavailable staff, and seasonal flooding. The survey also found that caregiver knowledge of danger signs for childhood illness is weak. For example, only one in seven caregivers (15%) identified "fast or difficult breathing" – the cardinal sign of pneumonia – as an important sign of illness. Therefore, both the supply of and demand for curative interventions for sick children are dangerously low.

Detailed implementation planning Convened by the DHMT and hosted by Save the Children, a detailed implementation planning workshop in Kitwe was held from March 9-11, 2009. The DIP was developed in close collaboration with stakeholders at national, district and community levels; the MOH, Copperbelt Provincial Medical Office (PMO), UNICEF, the USAID Mission, and other key partners and stakeholders, including local chiefs and members of Neighborhood Health Committees (NHCs), participated. The workshop included a detailed presentation of the LINCHPIN project with focus on CCM and newborn care. Skills building sessions on assessing community resources, community mobilisation and factors that enable the environment were also held. During the DIP process, Save the Children shared its CCM toolkit¹ (indicators, registers, supervision check-lists, competency-based training and supervision, etc.). In addition, initial findings of the baseline survey were presented and discussed by participants, and the LINCHPIN workplan was fine-tuned.

The DIP workshop also reviewed Save the Children's global experience in CCM of pneumonia. Partner roles, responsibilities, and activities were identified by the participants. The DIP was reviewed and approved by USAID in June with a few minor additions, and the Final Revised DIP has now been submitted.

¹ Marsh DR, Sadruddin S, Rivera D, Swedberg E, Tools to Introduce Community Case Management of Serious Childhood Infection, Save the Children: 2008.

During the DIP, government and multilateral stakeholders in Zambia identified the LINCHPIN project as policy-informing. Save the Children now participates in the national technical working group to develop the CCM strategy in Zambia. In recognition of Save the Children's capacity and technical ability in CCM, the MOH added Lufwanyama as the 12th district to pilot the CCM strategy in Zambia.

Advocacy, communication and policy dialogue on child survival The main accomplishments were:

- Signed partnership operating agreement with the Lufwanyama DHMT; an MoU was developed with MOH national headquarters and is being reviewed by the permanent secretary;
- Reviewed existing policy, norms, and protocols related to CCM; the MOH recently authorized CHWs to administer antibiotics at the community level and issued a letter of intent from the Permanent Secretary to WHO;
- Held briefings for MOH, WHO, UNICEF, DHMT, NGOs, on the impact of evidence-based CS best practices, including CCM;
- Disseminated project summary to partners working in CS;
- Held monthly or weekly meetings with DHMT on CCM;
- Submitted contributions to the development of Zambia's new Road Map for the Accelerated Reduction of Maternal and Newborn Mortality and Morbidity;
- Participated in joint planning meetings with the DHMT; and
- Held community leaders' and partners' sensitization workshop in August 2010.

Other achievements

- Took on role as regular participant in the monthly Maternal and Child Health Technical Working Groups in Lusaka. This would not have been possible had Save the Children not made the decision to re-locate the Program Manager position to Lusaka.
- LINCHPIN supported the DHMT initiative for the National Child Health Week, with material and logistical support.
- Mobilized a supply of Albendazole and vitamin A through Vitamin Angels. The Albendazole (valued at \$360) and vitamin A (valued at \$1,762) are expected to reach over 3,000 children.
- By the end of October 2010, 111 TBAs in the district will have received refresher training; and all 85 CHWs will have been trained in CCM.

B. Activities Progress Status

Project Objectives/ Results	Year I Activities Planned	Activity Progress/ Status/Results	Comments
IR-1: Increased access to and availability of services	Review and adapt training materials	Review of some TBAs training materials done. Check list and registers not yet completed.	To be completed by October 2010
	Train and refresh 120 TBAs in ENC, PNC, facilitated referrals	Completed, a total of 111 TBAs refreshed from 14 health facilities (all female)	9 TBAs dropped out of the program
	Train 8 master trainers in CCM	Completed, a total of 8 (4m & 4f) trainers drawn from the PHO, DHO trained	On course
	Train 85 CHWs in CCM	41 CHWs (32 male and 9 female) have been trained in CCM during this reporting period	The remaining 44 will be trained in the next fiscal year
IR-2: Improved quality of services	Refresh 20 nurses in TBA supervision	15 nurses (1male and 14 female) trained in TBA supervisory skills	2 health centres were not represented at the training
	Monitor medication and supply system	DHMT has supplied medicine kits with amoxicillin, zinc and ORS to all the health centres.	Stock outs have not yet been established
	Facilitate supportive supervision	All the trained TBAs have received at least 2 supportive supervision visits since being trained	Supportive visits conducted monthly to the TBAs by the trained health workers
IR-3: Increased demand for services and healthy practices	Hold meetings with community leaders	The project met all the 6 traditional leaders in the operational area. These were consultative and consensus building meetings. All the 6 chiefs offered support to the project.	Ongoing consultative meetings held quarterly
	Hold meetings with CHWs	85 CHWs have been identified and verified as active. Meetings were held at health centers with the 85.	Monthly meetings held at health centre level with

		The aim was to orient the CHWs on their roles related to CCM. 82 CHWs and 102 TBAs were identified making 67 teams. So far 67 teams have been identified out of the expected 105 resulting in 64% coverage.	mobilisers and health centre staff
IR-4: Enabled environment	Engage in national, district planning cycles	During LINCHPIN's first 12 months, Save the Children and the Lufwanyama DHMT identified key areas of collaboration and developed a memorandum of understanding, and LINCHPIN is now linked to the district planning cycle.	Continue engaging various stakeholders in child survival programs including MOH
		Save the Children's CCM plan has been aligned with MOH CCM plan.	
	Participate in the national technical, policy strategy groups and meetings	Save the Children is a member of the MOH led maternal and child health technical working groups which meets monthly.	Continue monthly meetings

C. Challenges and Factors That Have Impeded Progress

The challenges in Lufwanyama are many, including the following:

- Most health facilities are understaffed.
- Distances between health facilities and communities can, be far; there is no public transport; and some communities are completely inaccessibility during parts of the rainy season.
- Supply of clean delivery kits for TBAs and drugs for CHW kits is hampered by logistical challenges.
- Supervision is a challenge due to all of the above, plus the lack of MOH tools and training materials at the district level. The MOH C-IMCI supervisory checklist for CHWs is under review.
- The CCM training manual is still in draft form to be finalised by UNICEF and WHO.
- TDRC was not able to complete the health facility survey and qualitative study on time.

The challenges to access, availability, and quality limit the timely use of some services – especially those that deliver high impact, live-saving, curative interventions as shown by the baseline survey.

D. Technical Assistance Needs

The LINCHPIN team will need training in Behaviour Change Communication (BCC) and community mobilisation strategies and messaging. A Technical Assistance Workshop is planned for mid-October, 2010. Gail Snetro-Plewman, Save the Children's Africa Capacity-Building Advisor and expert in community mobilisation and BCC, will join David Marsh, Karen Waltensperger, and Kojo Yeboah-Antwi in Kalulushi to assess, plan for, and meet some of LINCHPIN's specific technical assistance needs, as the opportunity allows.

E. Substantial Changes in Project Intervention

There are no substantive changes to the project description from the Final Revised DIP submitted in September 2010.

F. Progress Toward Sustainability

Save the Children is creating no parallel structures. LINCHPIN works within and supports the MOH framework.

- A strong link has been established since the project's inception with the DHMT in Lufwanyama District. The project is linked to the DHO planning cycle.
- The LINCHPIN project supports the government's Road Map, and conforms to policies and practices aimed at reducing maternal and child mortality within the context of the integrated management of childhood illness.
- LINCHPIN has aligned its workplan with MOH CCM roll-out and CHW training.

G. Specific Information

None requested. All additions required at DIP review were submitted as part of Final Revised DIP.

H. Baseline Data

See Annex 6 for the report of the Health Systems Assessment conducted in mid 2010.

I. Management System

Financial management system All financial and administrative procedures follow the standard external and internal operating rules and procedures of Save the Children and USAID for reporting and controlling expenses. Save the Children uses the Agresso system to capture and document all expenses for the project. The Grants Manager and the Health Program Manager liaise with the Country Director, the Deputy Country Director- Programs on a regular basis to discuss current project requirements and program direction in budgeting and financing. Monthly, quarterly and annual budget reports are developed by the Grants Manager in liaison with the Program Manager. All financial reporting and compliance is overseen by the Country Director and the Finance and Administration at the national office and regional office. The LINCHPIN team is updated on monthly basis on the status of the program budget and

expenditures. The project has been receiving technical support from the Save the Children regional office in Pretoria.

Human resources LINCHPIN's original Program Manager, Grace Mazala-Phiri (engaged in January 2009), resigned unexpectedly at the time of the DIP to accept other employment. In June 2010, Save the Children welcomed LINCHPIN's new Program Manager, Chilobe Muloba Kambikambi, an experienced clinical officer who earned her postgraduate certificate and diploma in public health and is completing the thesis for her Master of Public Health (MPH) degree at the University of the Western Cape. Ms. Kambikambi brings seven years of significant clinical experience in Copperbelt Province and project management experience with CARE International, including an ELMA Foundation-funded program. The Program Manager is now based in Lusaka where she is able to participate in national level task forces and meetings, and maintain closer contacts with MOH, the USAID Mission, UNICEF, WHO, and other international partners and stakeholders.

At the end of calendar year 2010, the number of community mobilizers engaged by Save the Children will be reduced from 12 to three, each assigned strategically to a health centre and linked with NHCs. In mid FY2011, Marc Nosbach joined Save the Children Sweden in Zambia as the Country Director. His position is co-funded by Save the Children US and Save the Children Sweden.

Communication system and team development In November, 2009, Save the Children's Financial Manager and the LINCHPIN Accounts Officer attended a four-day US grants rules and regulations training workshop in Lusaka. The training was supported with funding from Save the Children Sweden.

In January 2010, three LINCHPIN team members (Finance Officer, Training Coordinator and Deputy Project Manager) participated in a project cycle and operational planning workshop held in Lusaka. The workshop included the following topics: (1) Information gathering, analysis and use; (2) Project information systems-a chain of logic looking at the 7 "W". (Who, Why, What, When, Where, How and What); (3) Overview of the structure of Monitoring and Evaluation Information system; (4) Project Evaluation - Start-up, Implementation, end of project and post project; (5) Monitoring and Evaluation plan: step-by-step looking at goals, indicators, data collection, data analysis and dissemination and use; (6) Risk Assessment and Management; (7) The Results Framework; (8) Financial management and budgeting; and (9) Procurement planning and requisition. This training was supported with match funding from Save the Children Sweden.

The Deputy Project Manager was trained in Lusaka as a Master Trainer in CCM; and in September 2010, a LINCHPIN's Training Coordinator and Training Officer were trained as district-level trainers in Kitwe, following the MOH curriculum.

Two Community Mobiliser meetings have been held since the project started, one in April and the other in August, 2010. The purpose of the meetings was skills building and information sharing/project updates. All 12 Community Mobilisers participated. From September 7-11, 2010, a grants and financial training was held for all of the LINCHPIN financial and program staff.

The finance training included how to use Agresso, an accounting package, and also covered financial procedures and systems. The grant training included learning on USAID policies and grant procedures.

J. Local Partner Relationships and Coordination

Partnership with the MOH

Save the Children's critical partnership with the MOH at all levels, is documented in earlier sections of this Year I Annual Report.

National-level working group

Save the Children is an active member and participates regularly on the national Maternal and Child Health (MCH) Technical Working Group. The MCH Working Group meets monthly and, depending on special needs, might meet more often, such as during the planning of the National Child Health Weeks.

K. Mission Collaboration

Save the Children continuously collaborates with the local USAID Mission in Zambia and has engaged the Mission in consultations on relevant issues related to the project.

Partnership with the Maternal and Child Health Integrated Program (MCHIP) in Zambia

Save the Children with other MCHIP partners held meetings to explore core funding opportunities in Zambia to scale up the maternal and child health interventions. The partnership submitted a concept note to the MCHIP headquarters in Washington for possible consideration. The partnership has also agreed to be part of Zambia's Everyone Campaign, Save the Children's global advocacy and popular mobilisation campaign to reduce maternal and child mortality by year 2015.

L. Operations Research Update – Annex 3

ANNEX 1: MONITORING AND EVALUATION TABLE (October 2010)

Slightly revised and clarified from DIP, (yellow boxes have changes [mostly wording, refining definitions and stratifications: CHW vs. TBA]; bold = emerging global consensus CCM indicators)

Result Level	Indicator	Method 1		Method 2		Comment	Levels (%)	
		Source	Timing	Source	Timing		Baseline	Target
Use of Interventions Increased (6 consensus indicators)	1. Newborn thermal care	HHS	BL/EL			Drying and warming) (a) Drying (b) Warming	79.1% (a) 79.8% (b) 87.5%	90% (a) 95% (b) 95%
	2. Treatment ratio for non-breathing newborn	LUNESP		SS	q3m	% of expected for TBAs delivering assisted breathing (was delivered to 6% of NB in LUNESP - probably close to full coverage [~80%] of a likely incidence of non-breathing newborns [~7.5%])	80% (6%/~7.5%)	80% (6%/~7.5%)
	3. Treatment ratio for possible severe bacterial infection	LUNESP		SS	q3m	% of expected for TBAs providing referral and/or first dose and referral (was identified in 11% of NB in LUNESP - probably close to full coverage [~80%] of a likely incidence of PSBI [14%])	80% (11%/14%)	80% (11%/14%)
	4. Postnatal care within the first two days	HHS	BL/EL	SS	q3m	% of newborn babies who are born at home, receiving postnatal care with 2 days of delivery.	28% (among 77 infants <3 months of age)	60%
	5. Treatment ratio for pneumonia	HHS	BL/EL	SS	q3m	(a) Received antibiotics for pneumonia. Zambian children experience ~0.35 episodes per child per year, which is the denominator (Rudan et al.)	12.5% (a) 50.0%	50% (a) 70%
	6. Treatment ratio for malaria	HHS	BL/EL	SS	q3m	Antimalarial for RDT+ fever/ malaria (ACTs for 3 days starting within 24 hours of onset of fever) (a) ACTs starting within 24 hours of onset of fever. Denominator will have to come from local MoH estimates.	11.2% (a) 12.4%	50% (a) 70%
	7. Treatment ratio for diarrhea	HHS	BL/EL	SS	q3m	ORT and zinc for diarrhea (a) ORT for diarrhea (b) Zinc for diarrhea. Denominator will have to come from local MoH estimates.	0 73.8% (b) 0	50% (a) 90% (b) 50%
###. Treatment coverage	HHS	BL/EL	SS	q3m	% sick children receiving appropriate treatment within 24/(48) hours of symptom onset			

Access Increased (8 consensus indicators)	8. CHW (and TBA) Density					8A = # CHWs (8B = # TBAs) delivering reports/1000 <5 population (=17,000)	0	5/1000 (85/17000)	
	9. Target Area Coverage				TR/Sup	9A = % NHCs with 1 or more CHW delivering reports (9B = TBA delivering reports)	0%	90%	
	10 Functionality				Sup	10A = % CHWs (10B = TBAs) submitting reports	0%	90%	
	11. Retention Strategy				DHMT	Does a written plan exist and is it reviewed annually for CHW? TBA? (DHMT has no current "package," and proposes % of planned retention or motivation activities implemented i.e: transport, training, reporting tools, medicines)	No	Yes	
	12. Retention				Sup	12A = % CHWs (12B = TBAs) functional on Jan 1 who are still functional on Dec 31st. (or % CHWs [and TBAs] functional 12 months after training)	0	80%	
	13. Referral	HSA			Sup	13A = % CHW (13B = TBA) <5 cases seen who are recommended for referral, excluding routine referral	unknown	to be determined	
	14. Appropriate Referral	HSA			Sup	14A = % CHW (14B = TBA) <5 cases with DS or severe disease recommended for referral	0	80%	
	15. Successful Referral	HSA			Sup	15A = % recommended referral by CHW (15B = TBA) accomplished (based on next day follow up)	0	80%	
	16. Supervision Strategy				DHMT	Availability of ;1) checklists,2) SOPs 3) Supervision plan4) Supervisions Training Manual	NoNoYesNo	Yes	
	17. Routine Supervision Coverage				Sup	17A = % CHWs (17B = TBAs) receiving > 1 supervisory visit in the prior 3 months with registers and/or reports review	pending	80%	
	18. Clinical Supervision Coverage				Sup	18A = % CHWs (18B = TBAs) receiving > 1 supervisory visit in the community in the prior 3 months where case management was observed (and/or scenarios used) and coaching provided	pending	80%	
	19. CHW/Supervisor Ratio				Sup	19A = # CHWs/# Supervisors 19B = # TBAs/# Supervisors	pending	a) 5/1 b) 5/1	
	Service Quality According to Standard (10 consensus indicators)								

Demand Increased (4 consensus indicators)	20. Complete Consistent Case Registration				Sup	q3m	20A = % CHW (20B = TBA) with 4-5 of 5 cases completely registered with consistency among age, assessment, classification, treatment, and referral	not applicable	80%
	21. Case Management Knowledge			Sup	q6m	21A = % CHW (21B = TBA) correctly managing case scenario, probably monthly	not applicable	80%	
	## Case Management Practice						##A = % CHW (##B = TBA) correctly managing case by direct observation, probably quarterly		
	22. Respiratory rate determination			Sup	q6m	22A = % CHW (22B = TBA) correctly counting RR (+/- 2 bpm)	not applicable	80%	
	23. Diagnostic and Drug Availability	HSA		Sup	q3m	23A = % CCM (23B = TBA) sites with all essential drugs and diagnostic equipment (RDT, timer) available over last month	not applicable	80%	
	24. Treatment compliance			Sup	q3m	based on follow-up of CHW cases		90%	
	25. Case Load	HSA		Sup	q3m	25A = # cases/m for CHW (25B = TBA)	unknown	5-20/m	
	26. BCC Strategy and Communication Materials			DHMT	q12m	plan for communication developed and messages and materials for health staff and community tested and available (yes/no)	No	yes	
	27. Knowledge of Illness signs (newborn)	HHS	BL/EL			Knowledge of 2+ newborn danger signs (a) Know ledge of 4+ danger signs	69.9% (a) 11.2%	80% (a) 60%	
	28. Knowledge of Illness signs (child)	HHS	BL/EL			Knowledge of 2+ child danger signs (a) Knowledge of 4+ danger signs	85.4% (a) 22.4%	90% (a) 70%	
	29. First Source of Care	HHS	BL/EL			% caregivers of children U5 in CCM areas who report seeking CHWs or TBAs as first source of care for the sick child	0	80%	
	30. Lufwanyama Living University			PR	q6m	DHMT interested in knowing how this will be measured.	No	TBD	
	31. Research findings presented (#)			PR	q6m		0	3	
	32. NHCs trained in BCC			PR	q6m	# of NHC Trained in BCC	0	75%	
	33. TBA-CHW teams trained in teaming			PR	q6m	# of TBA-CHW teams Trained in teaming	0	90%	
	34. Costing			DHMT	q12m	comprehensive costing for all components established, i.e. supply chain mgt, training, supervision, etc.) (yes/no)	Yes	yes	
	Environment Enabled (5 consensus indicators)								

				DHMT	q12m	DHMT budget includes line item(s) for CCM (% of comprehensive); DHMT needs to know "units"	No	yes
35. District Financial Contribution				DHMT	q12m		No	yes
36. Sensitization				DHMT	q12m	% targeted units (135 NHCs with each unit having an population on 500 people) sensitized to strategy		80%
37. Standard Reporting				DHMT	q12m	37A = standardized CHW (37B = TBA) tools 1) Registers 2) Monthly Reports 3) Supervisory Checklist 4) Mentor forms	No	yes
38. District CCM Monitoring				DHMT PA report	q12m	% implementing sub-districts (health facilities) using CCM monitoring data	0	80%

ANNEX 2: FY 2011 WORKPLAN (YEAR 2) – OCTOBER 2010 – SEPTEMBER 2011

Timeline for planned activities for next fiscal year					
2011					
Cluster	Activities	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep
		1	2	3	4
Project Management	Monthly meetings with DHMT	X	X	X	X
	Stakeholder meetings	X		X	X
	Monthly skill building meetings with CMs	X	X	X	X
	Exchange Visit to Malawi	X			X
Monitoring and Evaluation	Policy and strategy review	X			
	Baseline assessment results disseminated	X			
	Process documentation	X	X	X	X
	Midterm assessment/survey (ELMA end line)				X
	Participatory midterm evaluation (ELMA final)				
	Routine field monitoring/data collection	X	X	X	X
Operation Research	Data Collection Study #1 (Teaming)		X	X	X
	Data Cleaning and Analysis				
	Data Collection Study #2 (Training: funding permitting)		X	X	X
	Data Collection Study #3 (Supervision: funding permitting)		X	X	X
Access	Training materials reviewed/adapted/developed		X		
	44 CHWs trained in CCM, ENC	X			
	150 TBAs/CHWs trained in teaming		X		
	National Days	X		X	
Quality	22 clinical/EHO trainers trained in CHW supervision	X			

	Medication and supply system monitored & facilitated	X	X	X	X
	Supportive supervision facilitated/documentated	X	X	X	X
Demand	1 Community Mobilization Officer and 3 Community Mobilizers trained as trainers in CM/BCC	X			
	135 NHCs trained in CM/BCC			X	X
Enabling Environment	Participation in national technical, policy, strategy meetings	X	X	X	X
	District/provincial planning cycles engaged			X	
	LINCHPIN national dissemination meeting		X		

ANNEX 3: OPERATIONS RESEARCH UPDATE

Contributed by Boston University:

Save the Children is collaborating with Boston University to conduct operations research to assess the feasibility and effectiveness of an integrated trained traditional birth attendant (TBA) and community health worker (CHW) team to deliver high-impact but under-used child survival interventions in Lufwanyama, a rural district in Zambia. The findings will inform strategies to reduce newborn and young infant mortality in settings where there are major facility-based human resource deficits, and where TBAs and CHW are widely available community-based cadres. The operations research will consist of three phases.

Phase I: Formative Research: This will employ qualitative pile-sorting methodology to characterize and prioritize domains and sub-domains of “teaming” relevant to rural Zambia. Participants will be drawn from members of the local health committees, CHWs and TBAs. The prioritized domains and sub-domains will be used to develop tools for measuring teaming in a rural setting.

Phase II: Quantitative Evaluation: We will employ a pre- and post-intervention design to assess the use of high impact newborn and child interventions. The outcome measures will include antibiotic use for pneumonia, ACT use for malaria, zinc and ORS use for diarrhea and referrals for neonatal sepsis and other serious conditions. We will longitudinally measure the level of teaming as well as determinants of teaming and any association between level of teaming and use of the high impact interventions.

Phase III: Qualitative evaluation: We use qualitative methods (FGDs and IDIs) to assess community opinion and acceptability of the TBA-CHW team. Opinion will be sought from caregivers, traditional/community leaders, local health committees, health workers and health managers as well as the TBAs and CHWs.

We have developed a detailed protocol which will soon be submitted for ethical approval both in the US and Zambia. We have also planned a pre-formative community engagement to take place in October to explore community understanding of “teaming”. This will help in developing the pile cards for the later pile sorting exercise.

ANNEX 4: PAPERS AND PRESENTATIONS-NOT APPLICABLE

NONE TO REPORT.

ANNEX 5: RESULTS HIGHLIGHT

“Zambino” – A Programmable Young Infant Mannequin for Training Frontline Health Workers to Assess Respiratory Rate and Chest In-drawing

Pneumonia is the leading cause of death among children under age five years globally. Case management is a major control strategy. Case management of acute respiratory infection in low-income countries rests on correctly counting the respiratory rate and recognizing chest in-drawing. WHO-recommended IMCI and CCM training recommends the use of hospitalizing sick children who demonstrate signs of pneumonia, supplemented by videos. Hospital-based training is costly, logistically difficult and subject to uncertain patient availability. Community- or out-patient-based training is less costly, but is even less likely to encounter children with pneumonia. The seasonality of pneumonia may preclude finding any cases anywhere during some months.

Medical simulators are increasingly used in developed medical systems, not only for advanced medical training, but also for teaching basic clinical signs and procedures. Studies have indicated the effectiveness of simulator-based training in developed countries' healthcare systems, but experience in low-income settings has been mainly limited to mannequins for training in newborn resuscitation. Child mannequins that can demonstrate respiratory signs are available but expensive, and include electronic programs with advanced algorithms for pulmonary and cardiac disease. In addition to high cost, they are expensive to maintain. Moreover, no currently available simulator demonstrates chest in-drawing, the cardinal sign of severe pneumonia.

In the context of its USAID/CSHGP and ELMA Philanthropies funded Lufwanyama Integrated Newborn and Child Health Project in Zambia (LINCHPIN), Save the Children intends to develop an inexpensive mechanical mannequin for use to impart, measure and sustain skills in pneumonia case management. The design will incorporate simple mechanical principals with low maintenance requirements. No electrical power will be required, and the design eliminates costly electro-mechanical programming. The mannequin will include four basic, independently controlled subsystems: (1) Adjustable respiratory rate; (2) On/off intercostal retractions; (3) On/off substernal retractions (chest in-drawing): mild, moderate and severe; and (4) Paradoxical breathing.

The design incorporates easy-to-access dials and knobs providing variable-setting locking mechanisms to demonstrate different combinations of the four subsystems. The mannequin could be coupled with simple battery powered audio cassette/speaker to demonstrate audible wheezing, inspiratory and expiratory stridor, and grunting coordinated with specific mannequin actions. A low-cost mechanical mechanism with simple maintenance requirements will permit the wide-spread use of this mannequin to supplement initial and re-fresher training in pneumonia case management and in monitoring quality of case management once deployed. Save the Children has discussed the mannequin, nicknamed “Zambino,” with the WHO Department of Child and Adolescent Health and Development (CAH), and it is supportive.

Save the Children aims to compare the effect of Zambino-supplemented training to standard training in imparting skills in pneumonia case management. Testing will take place in a large rural district in Zambia where Save the Children and collaborators have an established infrastructure in place for research and development. Estimated cost to develop and test Zambino is estimated at \$150,000, and Save the Children is actively fundraising.

**LUFWANYAMA INTEGRATED NEWBORN AND
CHILD HEALTH PROJECT IN ZAMBIA
(LINCHPIN-ZAMBIA)**



HEALTH SYSTEM ASSESSMENT REPORT
DRAFT 2

SEPTEMBER 2010

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USAID
FROM THE AMERICAN PEOPLE

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ACRONYMS

ACT	Artemisinin-based Combination Therapy
BU/IRB	Boston University Institutional Review Board
CGHD	Center for Global Health and Development, Boston University
CCM	Community Case Management
CHW	Community Health Worker
DHMT	District Health Management Team
HF's	Health Facilities
HMIS	Health Management Information System (HMIS)
HW	Health Worker
ITN	Insecticide-treated Bed Net
KPC	Knowledge, Practice, Coverage
LINCHPIN	Lufwanyama Integrated Neonatal and Child Health Program In Zambia
LUNESP	Lufwanyama Neonatal Survival Project
MDG-4	Millennium Development Goal 4
MOH	Ministry of Health
NCHS	National Center for Health Statistics
ORS	Oral Rehydration Solution
ORT	Oral Rehydration Therapy
NMR	Neonatal Mortality Rate
PMTCT	Prevention from Mother to Child Transition
PNMR	Post-neonatal Mortality Rate
RDT	Rapid Diagnostic Test
TBA	Traditional Birth Attendant
TDRC	Tropical Diseases Research Centre
U5MR	Under 5 Mortality Rate
WHO	World Health Organization
ZIMMAPS	Zambia Integrated Management of Malaria and Pneumonia Study

EXECUTIVE SUMMARY

Introduction: Save the Children, partnering with the Center for Global Health and Development of Boston University (CGHD) and the Lufwanyama District Health Management Team, (DHMT) has launched a catalytic five-year *Innovation* project to decrease under-five mortality in Lufwanyama District in Zambia to increase the use of life-saving interventions through delivery channels that are accessible, available, high quality, demanded and supported. The strategy consists of an integrated, community-based newborn care and community case management (CCM) of childhood illness package. This strategy is delivered through an enhanced district-wide community health program linked to health facilities and is consistent with Ministry of Health (MOH) plans and policies. This health services assessment was conducted as part of a comprehensive baseline evaluation to assess the availability and quality of child health services in the district, the resources available for the provision of these services, and the challenges related to project implementation.

Methods: All health facilities in the district were assessed using a pre-tested checklist to ascertain their capacity to support neonatal and child health services. The survey tool included staffing, services provided, and the adequacy and availability of infrastructure, supplies and drugs. Relevant facility records and registers were reviewed. The health workers were interviewed regarding training and supervision of job performance. Their practice and knowledge on management of neonatal and child illnesses were assessed using case studies. TBAs and CHWs attached to the facilities were also interviewed about their practices. Opinions about CHW/TBA teaming were sought from both the health facility and community-based workers. The study instrument was adapted from the RAPID CATCH 2008 questionnaire.

Results: The three basic child health services (sick child care, immunization, and growth monitoring) were offered in all the facilities and through outreach. Two-thirds (67.4%) of the sanctioned staff in all facilities was available on the day of survey. However, the two mission facilities had 126.7% available while non-mission facilities had only 38.7%. Only one facility (6.7%) had all the essential infrastructure available which was primarily because only two facilities had emergency transport. Protected water was available in all the facilities. 60% and 86.7% of the facilities had essential supplies and drugs available, respectively. None of the CHWs had all the mandated case management drugs because they were not allowed to stock an oral antibiotic for pneumonia. 73.3% of health facilities maintained up-to-date records and showed evidence of data use. Only 40% of health workers and 40.9% of CHWs reported receiving in-service or pre-service training in at least one child health topic in the last 12 months. 80% of health workers and CHWs reported receiving external supervision at least once in the last 6 months. Clinical encounter for sick children per U5 population per year was estimated as 1.06 ranging from 0.47 to 2.23.

Conclusion: This study has highlighted the well documented critical staffing situation in rural Zambia: an absolute shortage aggravated by poor distribution of the limited workforce and supporting the implementation of a national Community Health Programme strategy as developed by the MOH, with the aim of repositioning and expanding its CHW cadre. The need to improve access to case management of malaria, diarrhea and pneumonia in this district cannot be overemphasized. Thus, the LINCHPIN project is highly appropriate for this district. The

capacity of the health system to support community based work is limited and will need to be strengthened.

1.0 BACKGROUND

Globally, an estimated 8.8 million children under five years of age die annually with many of these deaths occurring in sub-Saharan Africa (WHO/UNICEF 2010). Zambia contributes approximately 1% of global child mortality, with some 77,000 deaths among children younger than 5 years old annually. Zambia is not on track to achieve Millennium Development Goal 4 (MDG-4), which calls for a two-thirds reduction in under-five mortality from 1990 levels by 2015. Zambia is characterized as having made “no progress” in achieving the MDG-4 because the under-five mortality rate for 2008 (148 per 1000) was more than 40 per 1000 with an average annual rate of reduction of less than 1% for 1990–2008. The neonatal mortality rate of 36 per 1000 and infant mortality rate of 92 per 1000 indicate that almost a quarter (24.3%) of under-five deaths take place during the first month of life and 62% take place before the child’s first birthday.

The main causes of child death in Zambia are: (1) newborn conditions (26%); (2) malaria (15%); (3) diarrhea (14%); (4) pneumonia (13%); and (5) HIV/AIDS (12%) (WHO/UNICEF 2010). Although effective interventions to prevent and/or treat neonatal and child mortality exist, children continue to die because the use of these interventions is low. Children with treatable conditions usually die at home, often untreated. The low coverage of these interventions is multi-factorial, involving challenges of access to, perceived quality of, and demand for service as well as the policy environment. Some of the challenges identified include; understaffed health facilities, hard-to-reach communities, erratic availability of supplies and drug kits, lack of capacity of district health management teams (DHMTs) to lead and support health interventions, inability to harness and use community-based resources, and inadequacy of referrals (Nakwala 2007, Geslin 2007).

The Boston University Center for Global Health and Development (CGHD), working with local partners including the DHMTs has just completed two cluster randomized community-based research projects. The first study, the Lufwanyama Neonatal Survival Project (LUNESP), used traditional birth attendants (TBAs) to deliver three essential newborn care interventions of resuscitation, thermal protection, and identification of newborns with signs of possible sepsis followed by the provision of a first dose of treatment (oral amoxicillin) and referral to the nearest health facility. The LUNESP approach significantly reduced newborn mortality (Gill 2010). The second, the Zambia Integrated Management of Malaria and Pneumonia Study (ZIMMAPS), pioneered community case management (CCM) in Zambia. Community health workers (CHWs) were trained to perform rapid diagnostic tests (RDT), and to prescribe artemisinin-based combination therapy (ACT) based on RDT results and amoxicillin for non-severe pneumonia instead of referral. ZIMMAPS showed the capacity of CHWs to use RDTs, ACT and amoxicillin to manage both malaria and pneumonia at the community level (Yeboah-Antwi 2010). Several studies conducted in South Asia have also demonstrated the effectiveness of using community-based health workers to reduce neonatal and child mortality (Bang 1999, Bang 1990, Bang 2005, Jokhio 2005, Baqui 2008, Kumar 2008, Bhutta 2008).

Building upon the findings of LUNESP, ZIMMAPS and studies in South Asia, Save the Children

has obtained funds from USAID, ELMA Philanthropies, and a private donor to partner with CGHD and the Lufwanyama DHMT to implement a catalytic five-year *Innovation* project to decrease under-five mortality in Lufwanyama District in Zambia by increasing the use of life-saving interventions through delivery channels that are accessible, available, high quality, demanded and supported. The strategy will consist of an integrated, community-based newborn care and CCM package delivered through an enhanced district-wide community health program linked to health facilities and consistent with Ministry of Health (MOH) plans and policies. The core innovation will be an integrated TBA-CHW team to provide community-based newborn and under-five (0-59 months) care in a government setting.

The project, Lufwanyama Integrated Neonatal and Child Health Program (LINCHPIN) will have four technical intervention areas: 1) Maternal and Newborn Care (40%) which is aimed at providing antenatal care, delivery with clean birth kits for those who cannot deliver at health facilities, and newborn care including postnatal care; 2) Pneumonia Case Management (20%) aimed at increasing access to, and availability of, non-severe pneumonia case management services and facilitated referrals delivered by community based volunteers; 3) Malaria control including the use of insecticide-treated nets (ITNs) and treatment (20%) through the use of RDTs and artemether-lumefantrine delivered by CHWs; and 4) Control of Diarrheal Disease (20%) delivered by CHWs using low osmolarity oral rehydration solution (ORS) and zinc therapy.

Prior to implementing the project, this health services assessment was conducted as part of a comprehensive baseline evaluation to assess the availability and quality of neonatal and child health services in the district, the resources available for the provision of these services, and to identify opportunities and constraints to the project that the health system presents.

2.0 GOAL, OBJECTIVES AND INDICATORS

2.1 Study Goal

To conduct a comprehensive health services assessment to assess the quality of services for delivering neonatal and child health interventions and to determine health workers' opinions of the proposed TBA-CHW team.

2.2 Specific Objectives

To assess the availability of basic and essential child health services.

To assess the basic and essential child health services in terms of:

- Staffing available to provide the services;
- Availability of essential infrastructure, supplies and drugs to provide the services;
- Availability and nature of support systems (health information system, training, supervision) to aid the provision of these services; and
- Quality of care through case scenarios.

To assess the opinion of health workers about TBAs and CHWs working as team.

2.3 Indicators

The rapid CATCH indicators as recommended by CORE Monitoring and Working Group (KPC

2000+) were used. The core indicators measured domains necessary for the basic functioning of the health system including access, inputs, processes and outputs.

Access:

Service Availability: Percentage of health facilities (HFs) that offer three basic child health services (growth monitoring, immunization, sick child care).

Inputs

Staffing: Percentage of staff who provide clinical services working in surveyed health facilities (HFs) on the day of the survey.

Infrastructure: Percentage of the essential infrastructure available in surveyed HFs on day of the survey (power, improved water source, functional latrine for clients, communication equipment, emergency transport, overnight beds, setting allowing auditory and visual privacy).

Supplies: Percentage of essential supplies to support child health in HFs/CHWs on day of the survey (accessible and working scale for child, accessible and working scale for infant, timing device for diagnosis of pneumonia, spoon/cup/jug to administer ORS).

Drugs: Percentage of first line medications for child health in surveyed HFs/CHWs on day of the survey (ORS, oral antibiotic for pneumonia, first line oral antibiotic for dysentery, first line anti-malarial, vitamin A).

Processes

Information System: Percentage of HF/CHW that maintain up-to-date records of sick U5 children (age, diagnosis, treatment) and for HF: have report in last three months and evidence of data use.

Training: Percentage of HF/CHW in which interviewed HWs reported having received in-service or pre-service training in child health in the last 12 months.

Supervision: Percentage of HF/CHW that received **external** supervision at least once in the last 6 months (supervision included one or more of the following: checked records or reports, observed work, provided feedback, gave praise, provided updates, discussed problems).

Output

Utilization of Curative Services: Number of clinical encounters (CHW/HF/annualized) for sick children per U5 population.

3.0 METHODS

3.1 Study Site

The study was conducted in Lufwanyama District in the Copperbelt Province of Zambia. Lufwanyama is a recently created, large, rural, undeveloped district with an estimated 2009 population of 85,033 extrapolated from the 2000 census (CSO 2003). At one time, it was part of an administrative zone called Ndola Rural. Despite its location in the mostly urban and industrialized Copperbelt, rural Lufwanyama District has little physical infrastructure, specifically: poorly maintained roads that are frequently impassible during the rainy season, and a near complete absence of electricity except that produced locally by diesel generators, and no piped water or sewage. Lufwanyama's district health office is currently located outside the district in the town of Kalulushi, 14 kilometers west of the mining center town of Kitwe. Lufwanyama has 15 formal health care centers (11 health centers and 4 health posts) staffed exclusively by nurses, nurse midwives, and/or clinical officers – but not a single physician. Four other health posts have recently been constructed but are not yet operational because they lack personnel. As a result of all of these factors, a high proportion of basic health services are provided through several categories of minimally trained community workers – trained TBAs, trained CHWs, male motivators, safe motherhood agents, family planning agents, disease surveillance agents, malaria agents, tuberculosis agents, HIV/AIDS agents, family planning agents, as well as untrained TBAs and untrained CHWs. The district has no hospital and the nearest hospital is the Kalulushi District hospital which is situated in the eastern corner of that district far from most of the health facilities in Lufwanyama District.

3.2 Study Design

We conducted cross-sectional health services assessments to measure relevant aspects of facility- and community-based newborn and child services including the quality of the services. Specific methods included: health worker and community based worker interviews; record reviews; and inventory checklists to assess the availability and status of essential equipment, supplies and drugs.

3.3 Study Participants

Participants included in-charges (managers) of the HFs and additional clinical staff providing neonatal and child health curative services in public and faith-based health institutions in the study area, and TBAs and CHWs attached to these institutions.

3.4 Sample Size and Sampling

For the HF assessment (inventory checklist and record review), all 15 health facilities were assessed. For the health worker interview, all the 15 in-charges (managers) were selected. If there was an additional health worker involved in providing neonatal and child health services at the facility, she/he was also selected. Where there was more than one additional health worker, the most senior was selected for the interview. Two registered TBAs and two CHWs were randomly selected from each HF catchment area for interview and assessment of practice. For each group, one was selected from a community located 5 km or less from the HF, and the other from a community more than 5 km from the HF.

3.5 Recruitment and Informed Consent

Official permission to conduct the HF assessments was obtained from the DHMT. The HFs were informed via written communication that an HF assessment and an HW interview would be conducted at some point in the near future and that the evaluation had been officially sanctioned by the DHMT. However, the exact date of the evaluation was not stated in order not to compromise evaluating the facility under real operating conditions. On the day of the assessment, the study team arrived at the facility in the morning, contacted the in-charges, briefed him/her on the study, and collected information on the other staff at the facilities that provide neonatal and child services.

For the TBAs and the CHWs, prospective participants were selected from an existing list indicating where they are located and the distance of their location from the HF. They were also not informed in advance of the visit.

During the consent process, the purpose and rationale of the study were explained and they were assured of confidentiality as well as their right to refuse participation. Only after written informed consent was provided was the participant interviewed.

3.6 Selection and Training of Data Interviewers

The data collectors were recruited from TDRC, Lufwanyama DHMT and LINCHPIN Kalulushi staff. The LINCHPIN Deputy Program Manager and the Monitoring and Evaluation Officer served as supervisors.

A three-day training for the data collectors was conducted in Kalulushi from February 1-3, 2010. There were three facilitators, two from the Tropical Diseases Research Centre (TDRC) in Ndola (a social scientist and a research scientist) and the Principal Investigator (Kojo Yeboah-Antwi) from Boston University (CGHD). The training was participatory and used several relevant methods including lectures, discussions and role plays. They were trained on how to use the interview forms and the checklist. They were taken through the forms question by question, explaining each thoroughly and detailing the information required. The training also covered the protection of human subjects, confidentiality and the process of obtaining informed consent.

Since the data collection did not happen immediately after the training, a one-day orientation was organized for the data collectors in June 2010 just before the data collection. The one-day orientation was facilitated by the TDRC research scientist and the supervisors (LINCHPIN Deputy Project Manager and Monitoring and Evaluation Officer).

3.7 Data Collection

The study instruments were adapted from the RAPID CATCH 2008 questionnaire and were approved by the DHMT. The checklist for the HF assessment collected information on the HFs' capacity to support neonatal and child health services which included staffing, health services provided by the facility, adequacy and availability of infrastructure for service delivery, availability and state of medical equipment, availability of basic drugs and supplies and availability of treatment charts and guidelines. Review of appropriate records and registers was also carried out. The HWs were interviewed regarding training, length of service, access to national guidelines, use of wall charts or other aids for managing illnesses, and supervision of

job performance. Their practice and knowledge on management of neonatal and child illnesses were assessed using case studies. The TBAs/CHWs were interviewed about their practice and the resources available to them. Areas covered included their training, supervision and support, opinion about forming a team and working together, availability of drugs and supplies, and any barriers and challenges to their performance. Their records were also reviewed. Case scenarios were administered in a gentle and non-threatening way to assess their skills and knowledge.

The tools were pretested in Kalulushi District, which is adjacent to Lufwanyama District. Data collection took place from June 16 - July 2, 2010.

3.8 Data Management and Analysis

Completed forms were checked by supervisors in the field. Forms were reviewed before collection and obvious errors and incompleteness were corrected on the spot. Supervisors had a checklist that was used to ensure that all details in all sections of the questionnaire were correctly completed. Data entry and manipulation were undertaken using CS Pro through customized data entry screens with built-in range and consistency checks. All forms were entered twice by independent data entry clerks and completed data files compared. Errors were validated and reconciled. Analysis was done using Epi Info 6, and proportions were calculated based on the indicators.

3.9 Ethical Considerations

Ethical approval was obtained from Boston University Institutional Review Board (BU/IRB) and the TDRC Ethical Review Committee. The consent form was developed in accordance with guidelines of BU/IRB and the TDRC Ethical Review Committee.

4.0 RESULTS

A total of 15 HFs made up of 11 rural health centers (including the two mission facilities) and four health posts were assessed. Twenty HWs, two each from five facilities and one each from ten facilities, were interviewed. The twenty included one medical officer, one clinical officer, seven registered/certified midwives, seven registered/certified nurses, three environmental health technologists and one physiotherapist. Twenty-two CHWs, ten from “close” communities (within 5 kilometers of a HF) and twelve from “far” communities (>5 kilometers from a HF) were also interviewed. In addition, twenty-eight TBAs, sixteen from “close” communities and twelve from “far” communities were also interviewed.

4.1 Service Availability

All the surveyed HFs (100%) offered all three basic child health services (growth monitoring, immunization, and sick child care). With the exception of one health post, which offered these services only in the HF, the rest offered these services both in the HF and through outreach. Four HFs offered more growth monitoring and immunization services through outreach than in the facility.

4.2 Staffing

About two thirds of the staff who provide clinical services were working on the day of survey. While more than half of the facilities had less than half of the required clinical staff working on the day of survey, the mission facilities had more than the required working on the day of the survey. Two HFs did not have any clinical staff working on the day of the survey.

Table 1: Health staff assigned and present on day of survey

Type of health facility and number	Clinical staff sanctioned	Clinical staff present on day of survey	% of sanctioned staff present
Health Posts (4)	4	4	100
Rural Health Centers (11)	42	27	64.3
Mission Health Facilities (2)	15	19	126.7
Non-Mission Health Facilities (13)	31	12	38.7
All Facilities (15)	46	31	67.4

4.3 Essential Infrastructure

Only one HF out of the fifteen (6.7%) had all of the essential infrastructure present and functioning (power, improved water source, functional latrine for clients, communication equipment, emergency transport, overnight beds, setting allowing auditory and visual privacy) on the day of the survey. This was a mission facility. The essential infrastructure which was present in all the facilities was improved water source. The least common essential infrastructure item present was emergency transport. It was present in only two facilities (13.3%) and these facilities were mission facilities. However, thirteen of the facilities had a least one functioning motor cycle.

Table 2: Availability of essential infrastructure at health facilities

Infrastructure Item	No (n = 15)	%
Improved water source	15	100
Usable client latrine	14	93.3
Emergency communication	13	86.7
Auditory and visual privacy	12	80
Overnight bed	10	66.7
Power (Electricity of generator)	9	60
Emergency transportation	2	13.3

4.4. Essential Supplies

Availability at Health Facility

Nine of the fifteen health facilities (60%) had all the essential supplies to support child health services (refrigerator for storing vaccines, accessible and working scale for child, accessible and working scale for infant, timing device for diagnosis of pneumonia, jar/pitcher for preparing ORS, cup and spoon to administer ORS). The essential supplies which were present in all the facilities were a working scale for child and jar/pitcher for preparing ORS. The essential supply that was least available was a timing device for counting respiratory rate for the diagnosis of pneumonia. It was present in nine facilities (60%) and these facilities were the mission facilities.

Table 3: Availability of essential supplies at health facilities

Essential Supply	No (n = 15)	%
Accessible and working scale for child	15	100
Jar/pitcher for preparing ORS	15	100
Cup and spoon to administer	14	93.3
Refrigerator for storing vaccines	14	93.3
Accessible and working scale for infant	14	93.3
Timing device for diagnosis of pneumonia	9	60

Availability at CHW and TBA

Only one CHW (4.5%) had a functioning timing device (a timer for counting breaths or watch/clock with second hand). Thirteen TBAs (46.4%) had complete delivery sets for newborn care.

4.5 Essential Drugs

Availability at Health Facility

Thirteen of the fifteen HFs (86.7%) had all the essential valid (not expired) drugs (ORS, oral antibiotic for pneumonia, first line oral antibiotic for dysentery, first line anti-malarial, vitamin A) available. First line antimalarials and ORS were available in all the HFs. The first line oral antibiotic for dysentery was present in only 13 facilities (86.7%).

Table 4: Availability of essential drugs at the health facilities

Essential drug	No (n = 15)	%
ORS	15	100
First line antimalarial	15	100
Vitamin A	14	93.3
Oral antibiotic for pneumonia	13	86.7
First line oral antibiotic for dysentery	13	86.7

Availability at CHW

None of the twenty-two CHWs had all the mandated case management drugs (ORS, oral antibiotic for pneumonia, first line anti-malarial) available on the day of the survey because none had oral antibiotic for pneumonia. Nineteen (86.4%) and 13 (59.1%) had ORS and first line antimalarial available, respectively. There was no difference in the availability whether the CHW was close (5 km or less) to the rural health center or not.

Table 5: Availability of essential drugs at CHW

Essential drug	Far CHWs (n=12)		Near CHWs (n=10)		All CHWs (n=22)	
	n	%	n	%	n	%
ORS	11	91.7	8	80	19	86.4
First line antimalarial	6	50	7	70	13	59.1
Oral antibiotic for pneumonia	0	0	0	0	0	0

4.6 Health Management Information System (HMIS)HMIS at Health Facility

All of the fifteen HFs maintained registers of sick U5 children with age, diagnosis and treatment, but only 11 (73.3%) maintained up-to-date records with written reports in the last three months and evidence of data use.

Table 6: Health facility HMIS

HMIS Item	No (n = 15)	%
Register with age, diagnosis, treatment	15	100
Report written in last 3 months	15	100
Evidence of data use	13	86.7
Last entry within 7 days	12	80

HMIS at CHW

Seventeen of the CHWs (77.3%) maintained registers of sick U5 children with age, diagnosis and treatment, but only 12 (54.5%) maintained up-to-date records (complete entries with recent entry within the past month).

Table 7: CHW HMIS

HMIS Item	Far CHWs (n=12)		Near CHWs (=10)		All CHWs (n=22)	
	n	%	n	%	n	%
Register with age, diagnosis, treatment	9	75	8	80	17	77.3
Register with entry in past 3 months	8	66.7	6	60	14	63.6
Recent entry within one month	6	50	6	60	12	54.5

4.7 Training

Health Worker Training in Child Health

Only eight out of the twenty health workers (40%) interviewed reported receiving in-service or pre-service training in at least one child health topic in the last 12 months. The child health topic that the majority of the staff received training in the last 12 months was malaria treatment (30%). Only one staff received training in all the eight topics that were asked.

Table 8: Health worker training in child health

Topic	No (n = 20)	%
Malaria treatment	6	30
Vaccinations	4	20
Treatment of pneumonia or ARI	4	20
Diarrhea treatment	4	20
Malaria prevention / Use of ITNs	4	20
Nutrition	3	15
Breastfeeding	2	10
IMCI	2	10

Health Worker Training in Maternal and Newborn Care

Only four out of the twenty health workers (20%) reported having received in-service or pre-

service training in at least one maternal and newborn care topic in the last 12 months. Two of them received training in all the five topics that were asked.

Table 9: Health worker training in maternal and newborn care

Topic	No	%
Postnatal newborn care	3	15
Newborn resuscitation	3	15
Maternal postpartum care	3	15
Maternal antenatal care	2	10
Clean delivery of the newborn	2	10

CHW and TBA Training in Child Health

Only nine of the twenty-two CHWs (40.9%) who were interviewed reported having received in-service or pre-service training in at least one child health topic in the last 12 months. The child health topic that the majority of the staff received training in the last 12 months was malaria treatment (31.8%). No CHW received training in treatment of pneumonia or ARI. Eighteen TBAs (64.3%) reported receiving refresher training in newborn care including recognition of danger signs and referral in the last 12 months.

Table 10: CHW training in child health

Topic	Far CHWs (n=12)		Near CHWs (n=10)		All CHWs (n=22)	
	n	%	n	%	n	%
Treatment of pneumonia or ARI	0	0	0	0	0	0
Diarrhea treatment	1	8.3	1	10	2	9.1
Malaria treatment	2	16.7	5	50	7	31.8
Malaria prevention / Use of ITNs	1	8.3	4	40	5	22.7
Breastfeeding	2	16.7	3	30	5	22.7
Nutrition	0	0	2	20	2	9.1
Community IMCI	1	8.3	1	10	2	9.1
At least one topic	4	33.3	5	50	9	40.9

4.8 Supervision

Health Worker Supervision

Sixteen of the health workers interviewed (80%) reported receiving external supervision in which more than just delivery of supplies occurred at least once in the last six months. Six of the health workers (30%) received all the key supervisory activities.

Table 11: Health worker supervision in last 6 months

Supervisory activity	No (n = 20)	%
Checking records and reports	17	85
Providing feedback	17	85
Providing commendation/praise	17	85
Providing updates on administrative and technical issues related to work	17	85
Discussing problems	14	70
Delivery of supplies	12	60
Observation at work	11	55

CHW and TBA Supervision

Sixteen of the CHWs interviewed (72.7%) reported receiving external supervision in which more than just delivery of supplies occurred at least once in the last six months. Six of the CHWs (27.3%) received all the key supervisory activities. The most common activity performed during supervision was observation at work (81.8%). There was no significant difference between CHWs in “far” areas (>5km) (75%) and those in “close” areas (70%). Seventeen TBAs (60.7%) also reported receiving external supervision in the last six months, again with no significant difference between those from “far” areas (50%) and those from “close” areas (68.7%).

Table 12: CHW supervision in last 6 months

Supervisory activity	Far CHWs (n=12)		Near CHWs (n=10)		All CHWs (n=22)	
	n	%	n	%	n	%
Delivery of supplies	8	66.7	3	30	11	50
Checking records and reports	10	83.3	6	60	16	72.7
Observation at work	10	83.3	8	80	18	81.8
Providing feedback	9	75	5	50	14	63.6
Providing commendation/praise	10	83.3	6	60	16	72.7
Providing updates on administrative and technical issues related to work	7	58.3	5	50	12	54.5
Discussing problems	9	75	8	80	17	77.3
All activities performed	5	41.7	1	10	6	27.3

4.9 Utilization of Sick Child Services

The average number of clinical encounters for sick children per U5 population per year was estimated as 1.06. This ranged from 0.47 to 2.23. Both the highest and lowest encounters were recorded from health posts. The encounter for health posts was higher than for rural health center. Similarly, the encounter for non-mission facilities was also higher than mission facilities. These sick child encounters occurred at both facilities and outreach clinics, the majority at the former.

Table 13: Utilization of sick child services

Type of Health Facility	Sick U5 seen in year	U5 population	Encounters per 1000 children per year
Health Posts (4)	4124	2722	1.51
Rural Health Centers (11)	13948	14249	0.98
Mission Health Facilities (2)	3764	4767	0.79
Non-Mission Health Facilities (13)	14308	12204	1.17
All Facilities (15)	18072	16971	1.06

4.10 Geographic access

Only about half of Lufwanyama's population resides within 5 km (3.1 m) of a HF (a standard definition of access). However, only one in ten Lufwanyama households can expect to access case management for a sick child, given distance to health facilities, staff availability, and seasonal flooding. We conducted an "effective access" analysis, which will be documented and presented elsewhere, including at the Health Systems Conference in Montreux, Switzerland in November, 2010.

4.11 Immunizations

Twelve of the fifteen health facilities (80%) had all the nationally-mandated immunizations in stock on the day of the survey. The vaccines were not expired and were kept at the recommended temperatures. One health post did not have a refrigerator and therefore has never had any vaccines in stock. The other two, one rural health center and a health post, did not have BCG and OPV, and OPV available, respectively.

Table 14: Availability of vaccines

Vaccine	No (n = 15)	%
DPT/Pentavalent	14	93.3
Measles	14	93.3
BCG	13	86.7
OPV (Polio)	12	80

4.12 Availability of Guidelines

Only seven of the fifteen HF's (46.7%) had all the nationally mandated guidelines for care of sick children available and accessible on the day of the survey. Two health facilities (13.3%), both of them non-mission rural health centers, did not have any of the guidelines available. The most common guideline available was guidelines for PMTCT.

Table 15: Availability of guidelines

Guidelines	No (n = 15)	%
PMTCT	13	86.7
Antenatal care	11	73.3
Sick child care	10	66.7
Immunization	10	66.7
Delivery	9	60

4.13 Infection Control

Only two of the HF's (13.3%) had all infection control supplies and equipment, including functioning incinerator and adequate sharps and infectious waste disposal. Both were rural health centers and one each from mission and non-mission facilities. Most of the facilities did not have an autoclave or dry heat sterilizer but had chlorine-based disinfectant.

Table 16: Availability of infection control supplies and equipment

Item	No (n = 15)	%
Sterile latex gloves	15	100
Sharp disposal containers	15	100
Hand washing soap	15	100
5ml syringe in sterile packet	14	93.3
Chlorine-based disinfectant	14	93.3
19-21 gauge needles in sterile packet	12	80
Appropriate and adequate filled sharp boxes disposal	10	66.7
Appropriate and adequate infected waste disposal	10	66.7
Functioning autoclave or dry heat sterilizer	3	20

4.14 Community Participation

Twelve of the fifteen health facilities (80%) had a mechanism to elicit community participation and used the information obtained from the community participation. However, less than half of the facilities use patient satisfaction surveys to elicit community participation.

Table 17: Community participation

Method	No (n = 15)	%
Utilizes information from community to change health worker practice	14	93.3
Discusses information from community at management committee meetings	13	86.7
Meetings with TBAs/CHWs	13	86.7
Community representation on management committee	12	80
Patient satisfaction surveys	7	46.7

4.15 Community Referral

Eight HF's (53.3%) received at least one referral from a CHW in the month before the survey. Ten facilities (66.7%) received referrals in the last three months, but five (33.3%) had not received any referrals in the past 12 months.

4.16 Quality Improvement Process

Four HF's (26.7%), all of them non-mission rural health centers had documented quality assurance activities in the three months before the survey. Two other facilities (a non-mission rural health center and a health post) reported quality assurance activities but documentation was not seen.

4.17 Utilization of Immunization Services

Immunization service encounter per U5 population per year was estimated as 1.84 (there was no data from one health post). This ranged from 0.15 to 4.70. Both the highest and lowest encounter was recorded from rural health centers. The encounter for health posts was higher than for rural health centers. Similarly, the encounter for mission facilities was also higher than non-mission facilities. Immunization encounters occurred at both facilities and their outreach clinics.

Table 18: Utilization of immunization services

Type of Health Facility	Immunization of U5 in year	U5 population	Immunization encounters per pop. per year
Health Posts (3)	4352	2126	2.05
Rural Health Centers (11)	25856	14249	1.81
Mission Health Facilities (2)	10528	4767	2.21
Non-Mission Health Facilities (12)	19680	12204	1.61
All Facilities (14)	30208	16375	1.84

4.18 Utilization of Growth Monitoring Services

The mean number of encounters for growth monitoring services per U5 population per year was estimated as 3.17. There were no data from three facilities (two health posts and one rural health center). This ranged from 2.10 to 10.2. The highest was recorded from a rural health center and

the lowest from a health post. The encounter for health posts was lower than for rural health centers and that for non-mission facilities was also higher than mission facilities. These encounters occurred at both facilities and their outreach clinics.

Table 19: Utilization of growth monitoring services

Type of Health Facility	U5 received Growth monitoring in year	U5 population	Growth monitoring encounters per pop. per year
Health Posts (2)	4144	1445	2.87
Rural Health Centers (10)	41800	13057	3.20
Mission Health Facilities (2)	12552	4767	2.63
Non-Mission Health Facilities (10)	33392	9735	3.43
All Facilities (12)	45944	14502	3.17

4.19 Community Based Worker Attached to Health Facility

All the HFs reported having CHWs and TBAs attached to them. The number of CHWs attached ranged from 1 to 13 with an average of five. Similarly, the number of TBAs attached ranged from 1 to 22 with an average of 9. All facilities reported providing support and supervision to the CHWs and TBAs on a regular basis. Apart from one facility which provided this support quarterly, the rest provided the support monthly. These visits occurred both in the HF and in the community. Even though these visits occurred frequently, they rarely used a checklist. Only four facilities had a checklist for CHW supervision and two for TBA supervision. Seven facilities had recorded a CHW supervision report they carried out in the last three months and only five had such a report for TBA supervision. The main challenge for supervising the CHWs and TBAs was the lack of transport and few staff.

4.20 Health Worker Performance in Managing Sick Children

This assessment was done through case study scenarios. Only six health workers (30%) knew all steps (ask, look, do) when assessing a child with fever, cough and difficulty in breathing. There was difficulty in classifying these children as having severe pneumonia with or without malaria and non-severe pneumonia and the appropriate treatment to offer. Only 45% of the health workers indicated that a child with negative RDTs did not require ACT. Assessment for children with diarrhea and vomiting was no better. Only five health workers (25%) knew all the signs and symptoms of severe dehydration. However, 13 (65%) knew how to adequately manage a child with severe dehydration.

4.21 CHW and TBA Performance in Managing Sick Children

Only seven CHWs (31.9%) knew how to adequately assess and classify a child with fever, cough and difficulty in breathing and 11 (50%) knew how to manage such children. Fifteen of the CHWs (68.2%) indicated that a child with negative RDTs did not require ACTs. Eight TBAs (28.6%) knew six or more symptoms and signs in newborns that warrant immediate referral.

4.22 Opinions about TBA-CHW Teaming

All health workers, CHWs and TBAs interviewed indicated that teaming CHWs and TBAs was

a very good idea and fully endorse it. Below are quotations from the interviews:

“...it will be easy for my work and her work...”

“...it will feel good because we co-exist...”

“...it is good and needed...”

“...we will be reminding each other...”

“...it will be good because we work in the same community...”

“... will put ideas together..”

“...sharing ideas, knowledge and skills...”

“...can strategize together...”

“...good for continuity of care...”

“...assist each other in assessing and referring...”

“...he will cover me when I'm sick...’

The only concerns raised were male CHW working intimately with female TBA and different incentives for CHWs and TBAs.

5.0 DISCUSSION

This health services assessment was conducted as part of a comprehensive baseline evaluation to assess the availability and quality of child health services in Lufwanyama District, the resources available for the provision of these services, and challenges to the implementation of the project. All the HFs operating in the district were assessed.

It is reassuring to find that the three basic child health services (growth monitoring, immunization, and sick child care) are offered by all the facilities including “one man station” facilities. These services are not only offered in the HF, but also through outreach. Despite the provision of all these basic services, the staffing situation in the district is critical. While the two mission facilities have more clinical staff than required by the establishment, the remaining 13 MOH (public) HFs have less than 40% of the required staff per post. In some places, the only qualified staff available was an environmental health technologist who cannot credibly be classified as a clinical staff.

The availability of essential infrastructure to support the provision of the basic health services was limited especially in the MOH facilities. None of the MOH facilities had emergency patient transport. However, on a more positive note, all the facilities had adequate water sources and most had emergency communication systems to enable them contact the DHMT for replenishing supplies. Almost all the facilities had at least one functioning motorcycle, essential for the provision of outreach services.

The availability of essential supplies and drugs at health facilities was encouraging. ORS and first line antimalarial drugs were in stock in all the facilities but the availability of timing devices for diagnosis of pneumonia needs improvement. The availability of supplies and drugs at the community level (CHWs) was equally not impressive. A sizeable proportion lacked the first line antimalarial drug and none had in stock oral antibiotics for pneumonia probably because they are not permitted to stock these drugs. Less than 5% of the CHWs had a timing device for diagnosing pneumonia. Generally, resources for diagnosis and treatment for pneumonia were

limited in this district. LINCHPIN will support introducing and assuring these skills and supporting equipment and supplies.

Record keeping and use of data generated by the health facilities was impressive but record keeping by CHWs needs improvement. It was disappointing to find that only 40% of both health workers and CHWs reported having received in-service or pre-service training in at least one child health topic in the last 12 months. The topic that the most HF and community-based workers had received training was as expected, malaria treatment; but even for this topic, only three out of 10 had received the training. Only one out of 10 had received training in IMCI.

Four out of five of both health workers and CHWs reported receiving external supervision at least once in the last six months in which more than just delivery of supplies occurred. For health workers, the most common activity performed was receiving updates on administrative and technical issues related to work while for CHWs, it was observing them at work. Both of these activities are likely to improve staff technical competence.

For utilization of child health services, the clinical encounter for sick children per U5 population per year was estimated as 1.06 while that for immunization and growth monitoring services were 1.84 and 3.17, respectively. This is consistent with the findings of the household survey that showed very high coverage for preventive services and very low access to case management for malaria, pneumonia and diarrhea (Yeboah-Antwi 2010a).

Skills and knowledge of health workers and CHWs in managing sick children with fever, cough and difficulty breathing in the district, were very limited. This is not surprising since many had not received in-service/pre-service training on ARI in the last 12 months and a timing device for the diagnosis of pneumonia was the supply least available in the health facilities and at the community level.

This study has once again highlighted the critical staffing situation in rural Zambia, the poor distribution of the limited skilled workforce, and the importance of the new policy for the implementation of a national Community Health Programme strategy developed by the MOH, with the aim of repositioning and expanding its CHW cadre (MOH 2009). The need to improve the access to case management of malaria, diarrhea and pneumonia in this district cannot be overemphasized. The LINCHPIN project of teaming TBAs and CHWs to provide maternal and newborn care and CCM of malaria, diarrhea and pneumonia cannot come soon enough. However, the capacity of the health system to support community-based work is limited (lack of essential infrastructure, essential supplies, health worker skills) and will need to be strengthened.

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7.0 ANNEXES

7.1 Annex 1: LINCHPIN RAPID CATCH Core Indicators

Area of Analysis	Domain	Indicator	Performance
ACCESS	Service Availability*	% HF that offer three basic child health services (growth monitoring, immunization, sick child care)	100%
INPUTS	Staffing*	% staff who provide clinical services working in surveyed HF on the day of the survey	67.4%
	Infrastructure*	% essential infrastructure available in surveyed HF on day of the survey (power, improved water source, functional latrine for clients, communication equipment, emergency transport, overnight beds, setting allowing auditory and visual privacy)	6.7%
	Supplies*	% essential supplies to support child health in HF/CHW on day of the survey (accessible and working scale for child, accessible and working scale for infant, timing device for diagnosis of pneumonia, spoon/cup/jug to administer ORS)	HF - 60% CHW - 4.5%
	Drugs*	% first line medications for child health in surveyed HF/CHW on day of the survey (ORS, oral antibiotic for pneumonia, first line oral antibiotic for dysentery, first line anti-malarial, vitamin A)	HF - 86.7% CHW - 0
PROCESSES	Information System*	% HF/CHW that maintain up-to-date records of sick U5 children (age, diagnosis, treatment) and for HF: have report in last 3 months and evidence of data use	HF - 73.3% CHW - 54.5%
	Training	% HF/CHW in which interviewed HW reported receiving in-service or pre-service training in child health in last 12 months	HF - 40% CHW - 40.9%
	Supervision	% HF/CHW that received external supervision at least once in the last 6 months (supervision included one or more of the following: checked records or reports, observed work, provided feedback, gave praise, provided updates, discussed problems))	HF - 80% CHW - 72.7%
OUTPUTS	Utilization of Curative Services	# clinical encounters (CHW/HF / annualized) for sick children per U5 population	1.06 per pop Per year

HW Performance (Assessment)	% key assessment tasks are made by HW (check presence of general danger signs, assess feeding practices, assess nutritional status, check vaccination status)	-
HW Performance (Treatment)	% clinical encounters in which treatment is appropriate to diagnosis for child with malaria, pneumonia, or diarrhea (from record review for CHW / from Clinical Obs. for HF)	-
HW Performance (Counseling)	% clinical encounters in which the caretaker whose child was prescribed an antibiotic, antimalarial, or ORS, can correctly describe how to administer all drugs	-

7.2 Annex 2: LINCHPIN RAPID CATCH Optional Indicators

Area of Analysis	Domain	Indicator	Performance
ACCESS	Geographic Access to Curative Services	% population with geographic access to an authorized provider of curative child health services	50%
INPUTS	Availability of Immunizations	% HF with all nationally-mandated vaccines in stock on day of survey	80%
	Availability of Guidelines	% HF with all nationally-mandated guidelines for care of children available and accessible on day of survey	46.7%
	Infection Control	% infection control supplies and equipment available in HF on day of survey	13.3%
PROCESSES	HF-Community Coordination	% HF that have routine community participation in management meetings (with evidence through notes) OR have a system for eliciting client opinion, and evidence that client feedback is reviewed	80%
	Community Referral	% HF that received at least one referral from CHW in the last month	53.3%
	Quality Improvement Process	% HF that have documentation of routine quality assurance activities in last three months	26.7%
OUTPUTS	Utilization of Preventive Services	# encounters (CHW/HF / annualized) for children per U5 population in project area: a. for vaccination b. for growth monitoring and promotion	Vac – 1.84 GM – 3.17
	Client Satisfaction / Perceived Quality	% clinical encounters in which the caretaker was very satisfied (4 on a 4 point scale) for all three of the following: wait time, explanation of illness, and treatment received	-
	HW Performance (Alternative for Counseling)	% clinical encounters in which the HW counseled the caretaker to continue feeding sick child	-

ANNEX 7: UPDATED CSHGP PROJECT DATA FORM
Child Survival and Health Grants Program Project Summary
Oct-15-2010
Save the Children
(Zambia)

General Project Information

Cooperative Agreement Number: GHS-A-00-09-00013
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Final Evaluator:

Headquarter Financial Contact:

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Project Dates:

9/30/2009 - 9/29/2014 (FY09)

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Grant Funding Information

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PVO Match: \$583,275

General Project Description

Lufwanyama Integrated Newborn and Child Health Project in Zambia (LINCHPIN) Save

the Children, in partnership with Boston University Center for Global Health and Development, is supporting the Lufwanyama District Health Management Team in Copperbelt Province, Zambia, to implement a catalytic five-year *Innovation Category* initiative to decrease under-five mortality by increasing use of life-saving interventions through delivery channels that are accessible, available, high quality, demanded and supported. The interventions include maternal and newborn care, pneumonia case management, prevention and treatment of malaria, and control of diarrheal disease.

LINCHPIN's strategy is an integrated, community-based newborn care and community case management package delivered through innovative TBA-CHW teams, linked to health facilities and Neighborhood Health Committees, and consistent with Ministry of Health (MOH) plans and policies.

Project Location

Latitude: -12.91

Longitude: 27.36

Project Location Types:

Rural

Levels of Intervention:

(None Selected)

Province(s):

Copperbelt Province

District(s):

Lufwanyama District

Sub-District(s): --

Operations Research Information

OR Project Title: Feasibility and Effectiveness of an Integrated Community Health Worker-Trained Traditional Birth Attendant Team on the Delivery and Use of Treatments for Infections Among Children 0-59 Months of Age in Lufwanyama District, Copperbelt Province, Zambia

Cost of OR Activities:

\$199,424

Research Partner(s):

Boston University

OR Project Description: Background

Community-based delivery of high impact, life-saving interventions to young infants is difficult in low income countries, especially in rural settings. Challenges include policy constraints, unclear roles among existing cadres, and lack of experience. "Teaming" is a common service strategy in high income countries, especially in serious outcome settings, such as emergency wards and operating theaters. Health teaming, though not reported in low income countries, seems a sensible strategy for vulnerable young infants. The LINCHPIN Project aims to train and deploy TBA-CHW teams to provide essential newborn and continuous curative care for infants 0-59 months of age in Lufwanyama District, Zambia. We define a "team" as a "cohesive, communicating dyad with shared goals, complementary roles, and mutually supportive activities."

Methods

We will conduct pile-sorting formative research to prioritize locally relevant domains and sub-domains of teaming to inform training and measurement. We will train existing TBA-CHW teams and measure the level of teaming achieved – both structurally and functionally – and the likely factors that influence it. We will also use service statistics to measure (a) delivery of

interventions by TBAs and CHWs before and after teaming training and (b) the association between teaming achieved and the delivery of interventions.

Significance

The findings will contribute to the scant teaming literature from low income countries and, more importantly, may inform strategies to reduce newborn and young infant mortality in settings where TBAs and CHWs are policy-sanctioned, widely available community-based cadres.

Partners

Save the Children Sweden (Subgrantee)	\$844,320
Boston University (Subgrantee)	\$199,424
Lufwanyama District Health Management Team (Collaborating Partner)	\$0
Copperbelt Provincial Medical Office (Collaborating Partner)	\$0

Strategies

Social and Behavioral Change Strategies:	Community Mobilization Interpersonal Communication
Health Systems Strengthening:	Supportive Supervision Task Shifting Developing/Helping to develop clinical protocols, procedures, case management guidelines Developing/Helping to develop job aids Providing feedback on health worker performance Monitoring CHW adherence with evidence-based guidelines Referral-counterreferral system development for CHWs Community role in supervision of CHWs
Strategies for Enabling Environment:	Create/Update national guidelines/protocols Advocacy for revisions to national guidelines/protocols Stakeholder engagement and policy dialogue (local/state or national) Advocacy for policy change or resource mobilization Rapid Health Facility Assessment
Tools/Methodologies:	
Capacity Building	
Local Partners:	National Ministry of Health (MOH) Dist. Health System Health Facility Staff Government sanctioned CHWs TBAs

Interventions & Components

Control of Diarrheal Diseases (20%)

IMCI Integration CHW Training

Malaria (20%)

IMCI Integration CHW Training

Maternal & Newborn Care (40%)

IMCI Integration CHW Training

HF Training

Pneumonia Case Management (20%)

IMCI Integration CHW Training

HF Training

Operational Plan Indicators

Number of People Trained in Maternal/Newborn Health
There is no data for this project for this operational plan indicator.
Number of People Trained in Child Health & Nutrition
There is no data for this project for this operational plan indicator.
Number of People Trained in Malaria Treatment or Prevention
There is no data for this project for this operational plan indicator.

Locations & Sub-Areas

Total Population: 85,033

Target Beneficiaries

Zambia - SC - FY09

Children 0-59 months 15,136

Women 15-49 years 18,537

Beneficiaries Total 33,673

Rapid Catch Indicators: DIP Submission

Indicator	Numerator	Denominator	Sample Type: 30 Cluster	
			Percentage	Confidence Interval
Percentage of mothers with children age 0-23 months who received at least two Tetanus toxoid vaccinations before the birth of their youngest child	439	465	94.4%	9.1
Percentage of children age 0-23 months whose births were attended by skilled personnel	168	465	36.1%	7.0
Percentage of children age 0-5 months who were exclusively breastfed during the last 24 hours	110	134	82.1%	16.7
Percentage of children age 6-23 months who received a dose of Vitamin A in the last 6 months: card verified or mother's recall	293	329	89.1%	10.7

Percentage of children age 12-23 months who received a measles vaccination	163	191	85.3%	14.0
Percentage of children age 12-23 months who received DTP1 according to the vaccination card or mother's recall by the time of the survey	176	191	92.1%	14.1
Percentage of children age 12-23 months who received DTP3 according to the vaccination card or mother's recall by the time of the survey	164	191	85.9%	14.0
Percentage of children age 0-23 months with a febrile episode during the last two weeks who were treated with an effective anti-malarial drug within 24 hours after the fever began	20	178	11.2%	6.8
Percentage of children age 0-23 months with diarrhea in the last two weeks who received oral rehydration solution (ORS) and/or recommended home fluids	93	126	73.8%	16.9
Percentage of children age 0-23 months with chest-related cough and fast and/or difficult breathing in the last two weeks who were taken to an appropriate health provider	48	72	66.7%	21.8
Percentage of households of children age 0-23 months that treat water effectively	196	465	42.2%	7.4
Percentage of mothers of children age 0-23 months who live in households with soap at the place for hand washing	279	465	60.0%	8.3
Percentage of children age 0-23 months who slept under an insecticide-treated bednet (in malaria risk areas, where bednet use is effective) the previous night	237	465	51.0%	7.9
Percentage of children 0-23 months who are underweight (-2 SD for the median weight for age, according to the WHO/NCHS reference population)	93	408	22.8%	6.2

Percentage of infants and young children age 6-23 months fed according to a minimum of appropriate feeding practices	171	329	52.0%	9.5
Percentage of mothers of children age 0-23 months who had four or more antenatal visits when they were pregnant with the youngest child	255	463	55.1%	8.1
Percentage of mothers of children age 0-23 months who are using a modern contraceptive method	217	465	46.7%	7.7
Percentage of children age 0-23 months who received a post-natal visit from an appropriately trained health worker within two days after birth	21	77	27.3%	15.3

Rapid Catch Indicators: Mid-term

Rapid Catch Indicators: Final Evaluation

Rapid Catch Indicator Comments

Sample Size and Sampling

The sample size calculation was based on the least prevalent condition among the key outcomes (indicators) which is treatment for pneumonia. It was assumed that 10% of children aged 0 – 23 months will have a history of cough and fast and/ or difficult breathing (pneumonia) during the last two weeks. The proportion of these children who received antibiotic treatment was 38.8% from the Zambia DHS 2007. The target for this project is to increase the proportion of children receiving antibiotic treatment to 70%. With 80% power at 95% confidence intervals (CI), we will need to enroll 45 children with fast/difficult breathing. Since the prevalence of fast/difficult breathing in children aged 0-23 months was estimated at 10%, we needed to recruit 450 women with children aged 0-23 months in the baseline survey. This sample size calculated from the formula below (Figure 1) would give a high level of precision for the other outcomes since the prevalence of these conditions is higher.

Figure 1-Did not print from online form.

The sample size was recruited from all of the 19 HF catchment areas proportional to their population. In each HF catchment area one or more villages were randomly selected to ensure that no more than 15 households were enrolled from each village. In each village, households with mothers with young children (0-23 months) were selected systematically. The center of the village was identified with the help of the village headman and a bottle was spun to determine in which direction to select the first house. An integer “n” from 1-9 was randomly selected by the data collector and the nth house along the ray was selected as the first house. The next house selected was the one with the door nearest to the previous selected house and this continued until the number of survey participants for the village which was 15 was attained. If the selected

household did not have a mother with 0-23 month old child, it was replaced by going to the next household.

If the household has more than two mothers with a child of this age, the first to be introduced will be recruited. A total of 465 care givers of children 0-23 months were interviewed in all the 19 HF areas ranging from 15 (one village) to 60 (four villages).