Integrated Child Health Project

Activity Report VI

10,000 Long-lasting Insecticide Treated Mosquito Nets

FY-2004 Child Survival and Health Grants Program (CSHGP)
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Siem Reap, Cambodia
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USAID FROM THE AMERICAN PEOPLE
WORLD SWIM AGAINST MALARIA
CAMBODIAN RED CROSS
American Red Cross

ACRONYMS

ARC	American Red Cross
BCC	Behavior Change Communication
CRC	Cambodian Red Cross
HC	Health Center
ICH	Integrated Child Health
IFRC	International Federation of Red Cross and Red Crescent Societies
IEC	Information, Education, and Communication
LLIN	Long-lasting Insecticide treated mosquito Net
MOH	Ministry of Health
OD	Operational Health District
RC	Red Cross
RCV	Red Cross Volunteer
RCVL	Red Cross Volunteer Leader
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VSO	Voluntary Service Overseas
WHO	World Health Organization
WSM	World Swim Against Malaria

Cover photo: ICH project beneficiary taken by Daniel Cima, IFRC photographer

TABLE OF CONTENTS

Beneficiaries in Angkor Chum district raise their nets to confirm their commitment to take care of their new net during a distribution event

I. Summary

Twenty-three thousand Cambodian villagers in three administrative districts of Siem Reap province are now safe from malaria.[1] The Cambodian Red Cross distributed 10,000 long-lasting insecticide treated mosquito nets to the most malaria vulnerable groups including high risk (reclassified) Zone 1 villages as well as pregnant women, children, and the poorest of the poor. Additionally, key opinion leaders including volunteers and traditional birth attendants, as well as commune and village leaders also received nets to model and promote proper use and care. Distributions were conducted from February 7 until August 23, 2007 in all 254 villages of the three districts: Pourk, Angkor Chum, and Varin. Key stakeholders from the Siem Reap Provincial Health Department, the Angkor Chum Operational Health District, the administrative district offices, commune counsels, and health centers participated in the distributions.

The distribution strategy followed the new World Health Organization's Global Malaria Program position statement for rapidly scaling-up malaria prevention in high-burden countries. A behavior change communication strategy was developed to help beneficiaries understand and commit to proper use and care of their new long-lasting insecticide treated mosquito net. Each beneficiary signed a pledge form with pen or thumb print committing themselves to give priority use of the net to pregnant women and small children as well as not to sell the net or use it for fishing. Role plays conducted by Red Cross volunteers at distribution ceremonies and sessions were also used to communicate promote proper use and care. Additionally, an informational sticker highlighting three key messages was provided for each beneficiary to locate in their home as a constant reminder of these messages.

All long-lasting insecticide treated mosquito nets were distributed free of charge: 4,127 nets were distributed to the highest risk families in 54 malarious villages; 2,489 nets were distributed to pregnant or delivery women through health centers; 2,450 nets were distributed to the poorest of the poor; 934 nets were distributed to key opinion leaders including volunteers, traditional birth attendants, and local authorities.

Table 1. Distribution summary

Target Group	LLINs distributed	Percentage
1.1 Highest risk (malaria villages)	4,127	41%
1.2 Highest risk (pregnant women)	2,489	25%
2. Poorest of the poor	2,450	25%
3. Key opinion leaders	934	9%
TOTAL	*10,000*	*100%*

This activity was made possible with the support from several partners: World Swim Against Malaria (WSM) donated the 10,000 long-lasting insecticide treated mosquito nets; the International Federation of Red Cross and Red Crescent Societies (IFRC) paid the shipping costs and provided logistics support; and the American Red Cross provided technical, logistical, and financial assistance. Furthermore, distributions were carried out as part of the Integrated Child Health project, funded with the generous support of the American people through the United States Agency for International Development (USAID).

[1] Following the *Report of the Malaria National Baseline Survey 2004,* the average number of people sleeping under one mosquito net is assumed to be 2.3; therefore, the total beneficiary number is 2.3 multiplied by total number of LLINs distributed (10,000 LLINs).

II. Background

Cambodia has the worst malaria mortality and morbidity rates in Southeast Asia and one of the highest rates of malaria drug resistance in the world.[2] According to the National Health Statistics Report (NHSR) 2003, malaria is the third most common cause of outpatient attendance, the fifth main health problem among inpatients, and the second most common cause of hospital mortality. P. falciparum, the most potentially deadly type of malaria, accounts for an estimated 60-90 percent of rural cases.[3] With a malaria incidence (treated cases) of 7.5 per 1000 and 382 deaths in 2004, malaria poses a considerable disease burden, especially in high transmission areas.[4] New settlers in high transmission areas, people living or working in proximity to medium and high forest-covered zones (e.g. reclassified Zone 1 areas), people who are immune compromised, pregnant women, and children under five are at greatest risk of infection. One study documented malaria parasite rates in children to be 47 times higher in villages surrounded by forest than by rice fields.[5] Non-use of mosquito nets and under utilization of insecticide treatment further increases malaria risk among the vulnerable.[6] It is estimated that six percent of childhood mortality could be prevented through universal coverage of insecticide treated mosquito nets.[7]

Long-lasting insecticide treated mosquito nets have been proven to reduce malaria incidence and save lives. The Cochrane Review (2004) estimated that over a one year period 1,000 insecticide treated mosquito nets save 5.5 lives.

The Cambodian Red Cross (CRC) is implementing an Integrated Child Health (ICH) project in three administrative districts of Siem Reap province: Pourk, Angkor Chum, and Varin. The American Red Cross provides technical and financial assistance with the generous support of the American people through the United States Agency for International Development (USAID). The ICH project works alongside the Ministry of Health (MOH), Voluntary Service Overseas (VSO), and numerous non-governmental organizations to reduce infant and child morbidity and mortality in the three districts. The project focuses on the Cambodia child survival "scorecard" interventions which have been demonstrated to have the greatest impact on child morbidity and mortality.

CRC branch director distributes LLINs

According to the ICH project baseline survey completed in 2005, mosquito net coverage was 71 percent. Unfortunately, most of these nets were in extremely poor condition with large tears and holes. Furthermore, less than two percent of these nets were insecticide treated.

[2] http://www.cambodia.net/malaria/facts.html, retrieved January 17, 2006
[3] Population Services International/Cambodia, Annual Report 2004 p.12
[4] USAID/Phnom Penh, Malaria Strategic Plan 2006-2011, p.10
[5] Royal Government of Cambodia Ministry of Health, Country Update on Malaria Control, 2001
[6] Royal Government of Cambodia Ministry of Health, National Centre for Parasitology, Entomology and Malaria Control, November 2004 p.5
[7] Jones G, Steketee R, Black R. et al. *How many childhood deaths can we prevent this year?* Lancet 2003; 362, 65-71

Project staff develop role play to review malaria transmission and prevention information, as well as promote proper net use and care

III. Pre-distribution Activity

Basic education and behavior change communication about malaria transmission, prevention, danger signs, and referral to the health center has been ongoing throughout the three targeted districts since February 2006. This work is done through an extensive network of nearly 2,000 Red Cross volunteers (RCVs) whom have been trained on numerous child survival topics. RCVs complete home visits within their respective villages. This volunteer network permits the negotiation of improved health practices, including malaria prevention, to all 35,000 households across the three districts.

A behavior change communication (BCC) strategy was developed to effectively communicate proper net use and care. The BCC strategy follows a simplified 'stages of change' model which addresses four stages of behavior change: awareness, preparation, action, and maintenance.[8] Basic malaria education and awareness-raising about malaria transmission and proper net use was completed through the RCV network as described above. Role plays were developed and conducted by RCVs during distribution events to highlight the benefits of correct use and care of the new nets, preparing beneficiaries to properly use and care for their new nets. Related to the action stage, beneficiaries signed by pen or finger print a pledge form committing them to give priority use of the net to pregnant women and small children. The form also commits beneficiaries not to sell the net or use it for fishing. The perforated form is double signed by both the distributor and the beneficiary; one copy of the signatures acts as a receipt and is torn off and returned to the ICH Project for record keeping and follow-up monitoring (see Annex 3). Each net is also distributed with a high-quality plastic adhesive sticker with pictures and minimal supporting text emphasizing: (1) priority use for pregnant women and children, (2) non-exposure to sunlight, and (3) proper washing intervals (see Annex 4). Beneficiaries were instructed to put the sticker in a visible location in their home to help them remember how to maintain proper care of

Red Cross volunteers use role play to demonstrate proper use and care of nets to beneficiaries during a distribution

[8] Integrated Child Health Project Activity Report V. *Embracing a Behavior Change Communication Approach: A Practical Training to Operationalize Behavior Change Communication on a Community-based Child Survival Project,* July, 2007

their new net. Both the pledge form and key messages sticker were reviewed and approved by the Ministry of Health's National Malaria Center.

Related to beneficiary selection, community committees were established with support from project staff in all 254 villages. Each committee involved the village leader, MOH volunteers and RC volunteers. These committees developed distribution lists which targeted the most vulnerable and poorest of the poor. Prior to each distribution, project staff along with committee members reviewed the distribution lists and prepared the pledge forms.

IV. Distributions

All 10,000 long-lasting insecticide treated mosquito nets (LLINs) donated from World Swim for Malaria were distributed free of charge. The distribution strategy followed the World Health Organization (WHO)/Global Malaria Program position statement (see text box). Groups most vulnerable to malaria were targeted including reclassified high-risk Zone 1 villages as well as pregnant women, children, and the poorest of the poor in all 254 villages of the three administrative districts. Additionally, key opinion leaders including volunteers and traditional birth attendants, as well as commune and village leaders, received nets to model and promote proper use and care.

WHO/Global Malaria Program Position Statement

In most high-burden countries, ITN coverage is still below agreed targets. The best opportunity for rapidly scaling-up malaria prevention is free or highly subsidized LLIN distribution through existing public health services (both routine and campaigns). LLINs should be considered a public good for populations living in malaria endemic areas. Distribution of LLINs should be systematically associated with provision of information on how to hang, use and maintain them properly.

A total of 6,616 LLINs (66 percent) of the donation were targeted to the highest risk: 4,127 LLINs to malarious villages and 2,489 to pregnant women. Summary distribution lists are annexed to this report (see Annexes 1 and 2). Distributions in the 57 high risk malarious villages targeted families with children under five years of age and the poorest of the poor with the aim of increasing household coverage of LLINs to 65 percent. This coverage target was set to achieve the 'community-wide effect', whereas overall malaria incidence has been shown to decrease in villages achieving this coverage threshold.[9,10] These distributions were done through participatory events. Pre-selected beneficiaries within a close geographic proximity (varying between four to eight villages) were organized (see pre-distribution activities above) and invited to participate. Local authorities including district, commune, and village leaders as well as health center staff participated in each distribution event.

Distributions to pregnant and delivery women were done through the health centers to motivate ante-natal care visiting as well as delivery with a skilled birth attendant at the health center.

[9] Maxwell CA et al. (December 2002) *Effect of community-wide use of insecticide-treated nets for 3-4 years on malarial morbidity in Tanzania*, Journal of Tropical Medicine and International Health, Volume 7 No 12, pp. 1003-1008

[10] Hawley WA et al. (2003) *Community-wide effects of permethrin-treated bednets on child mortality and malaria morbidity in western Kenya*, American Journal of Tropical Medicine and Hygiene, 68 (Supp. 4), pp. 121-127

A total of 2,450 LLINs were distributed to the poorest of the poor in the remaining 197 villages not identified as the highest risk villages described above. Community committees identified the poorest and most vulnerable households with priority going to families with children under five years of age. Beneficiaries from villages within close geographic proximity (usually between four to eight villages) were invited to attend each distribution event. These events, organized with participation from local authorities and health center staff, were used to review malaria transmission information as well as proper use and care of the new nets.

The remaining 934 LLINs were distributed to key opinion leaders including MOH volunteers and traditional birth attendants, as well as village and commune leaders.

V. Challenges and Conclusions

1. Overall, LLINs were well received by all beneficiaries. Local authorities, including health center staff, were very happy to receive a net as well as provide free nets to the most vulnerable villagers.

CRC provincial committee members, CRC secretary general, district governors, and provincial health director participate in distribution ceremony

2. Several beneficiaries noted that it would be better if the nets were not white as they are likely to show dirt quickly; some beneficiaries pointed out that the nets could have been larger.

3. The targeting of the poorest of the poor, and organization of distribution activities for all 254 villages proved to be more time consuming than originally planned. Additionally, the selection of the poorest of the poor proved to be difficult for community committees as most villagers consider themselves to be very poor, and thus believed that they also should have received a free net.

4. Distribution ceremonies and sessions proved to be excellent opportunities to engage key stakeholders including district, commune, and village leaders, as well as health center staff, MOH volunteers, and Red Cross volunteer leaders and volunteers.

CRC staff and volunteers distribute LLINs in remote Varin district

5. Role plays performed by RCVs during distribution events were very well received by all participants.

6. A follow-up survey tool has been developed (see Annex 5) and will be used to measure proper understanding and use of the LLINs.

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Annex 1. LLIN distribution schedule to high risk malaria villages

No.	Date	Start Time	Site	Village	Commune	# of villages	# of families/ LLINs
1	6-19-07	8:30am	Svay Sor pagoda	Svay Sor	Svay Sor	6	363
2	6-20-07	8:30am	District Hall	Kanhchan Run	Prasat	9	694
3	6-21-07	8:30am	Check Ka Ov pagoda	Rundas	Srae Kvav	5	281
4	6-26-07	8:30am	Srae Nouy pagoda	Vat	Srae Nouy	4	393
5	6-27-07	8:30am	Lvea pagoda	Kouk Vat	Srae Nouy	3	241
6	6-27-07	1:30pm	School	Kouk Kandal	Lvea Krang	3	243
7	6-28-07	8:30am	School	Kouk Srok	Varin	1	127
8	6-28-07	1:30pm	RCVL house	Kouk Phnom	Varin	1	79
9	6-29-07	10:00am	Village center	Nel	Varin	1	24
10	7-2-07	8:30am	Damnak pagoda	Kouk Doung Chas	Kouk Doung	4	418
11	7-3-07	8:30am	School	Rovieng Thmei	Srae Khvav	4	228
12	7-3-07	8:30am	Commune office	Kork Por	Keoa Por	2	117
13	7-4-07	8:30am	Village center	Thumreab	Kouk Doung	3	204
14	7-5-07	8:30am	School	Rumduol Thmei	Doun Peng	3	124
15	7-6-07	8:30am	Nokor Pheas Hall	Lboeuk	Nokor Pheas	6	471
16	7-9-07	8:30am	School	Chumnom Reach	Srae Khvav	2	120
	TOTAL distributions to high risk malaria villages					*57*	*4,127*

Annex 2. LLIN distributions for pregnant and delivery women through health centers

No.	Health Center	District	Feb.	March	April	May	June	July	August	Total
1	Svay Sor	Varin	24	21	21	27	28	28	26	175
2	Varin	Varin	0	26	25	28	30	27	27	163
3	Nokor Pheas	Angkor Chum	25	9	4	24	27	23	28	140
4	Kouk Dong	Angkor Chum	10	18	11	26	28	25	28	146
5	Angkor Chum	Angkor Chum	9	34	14	20	23	19	23	142
6	Char Chhuok	Angkor Chum	35	31	22	22	25	24	20	179
7	Bot	Angkor Chum	48	32	22	28	25	21	28	204
8	Srae Noy	Angkor Chum	56	11	9	21	23	21	26	167
9	Reul	Pouk	21	21	21	3	11	22	9	108
10	Pouk	Pouk	28	24	6	16	25	29	27	155
11	Doun Deo	Pouk	2	46	36	28	21	11	34	178
12	Toek Vill	Pouk	0	8	0	11	16	9	34	78
13	Krabei Reil	Pouk	1	23	5	25	35	39	31	159
14	Samrong Year	Pouk	30	41	28	42	36	24	38	239
15	Sarar Sdam	Pouk	0	18	0	16	23	14	21	92
16	Damnak Slanh	Pouk	5	26	26	26	19	29	33	164
	TOTALS		**294**	**389**	**250**	**363**	**395**	**365**	**433**	**2,489**

Annex 3. Pledge form/receipt

(English translation)

I am the user of the mosquito net. I promise that:

- I will sleep under this long-lasting insecticide treated mosquito net every night and I will take care of it.
- I will not sell it or use it for fishing.

Date:...../...../..... Date:...../...../.....
Signature:..... Thumb print:.....
Provider:..... Receiver:.....

LOGOS LOGOS LOGOS LOGOS LOGOS

Date:...../...../..... Date:...../...../.....
Signature:..... Thumb print:.....
Provider:..... Receiver:.....

LOGOS LOGOS LOGOS LOGOS LOGOS

Annex 4. Correct use stickers

(English translation)

This long-lasting insecticide treated bed is effective at killing mosquitoes for a long time.

How to use:	Children and pregnant women should sleep under a long lasting insecticide treated bed net.	Keep the net in the shade and away from direct sunlight.	LLIN should be washed every 3 to 6 months with a little soap. Other chemical substances should not be used.	
LOGOS	LOGOS	LOGOS	LOGOS	LOGOS

Annex 5. Follow-up questionnaire on proper use and care

Interviewer's Name: ……. Position:……..	LLIN Receiver's Name: …….. Village:…….. Commune:…… District:……. Date:…….

1. What is your name please? *The interviewer confirms the person who has signed the pledge form as the person who received the LLIN.*

   ☐ Beneficiary signed pledge form ☐ Beneficiary does not match pledge form

2. In this house, has anyone received a LLIN from the Red Cross or the health center?

   ☐ Yes ☐ No

3. Can I see that LLIN?

   ☐ LLIN seen. ☐ LLIN <u>not</u> seen

   If, no, can you tell me, where is it and why? *Record the response and end the interview.*

4. Who/ how many people slept under this LLIN last night? Record number in each box

   ☐ Children under 5 years of age ☐ Pregnant women ☐ others _____

5. What do you know about use and care of this LLIN? *Do not read answers, but prompt for additional answers by asking "Anything else?"*

   ☐ Hang it in a room for 24 hours before first use

   ☐ give priority use for pregnant women and small children

   ☐ Keep it out of direct sunlight

   ☐ wash it no more than one time every 3 months

6. Did you receive an informational sticker about the proper use and care for this LLIN?
   ☐ Yes= sticker was seen ☐ No= sticker was not seen (*End interview.)*

7. Can you tell me what these pictures on the sticker mean? *prompt for additional answers by asking "What else?"*

   ☐ give priority use for the LLIN to pregnant women and small children

   ☐ Keep it out of direct sunlight

   ☐ wash it no more than one time every 3 months