Exposure to anti-malaria BCC messages: Second RBHS ITN dipstick survey

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Liberia

Rebuilding Basic Health Services (RBHS)

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Executive Summary

The Rebuilding Basic Health Services project (RBHS) is supporting the Ministry of Health and Social Welfare (MOHSW) to develop a comprehensive system of high-quality health services for all of Liberia through implementation of the National Health Plan and mobilization of communities. In collaboration with the National Malaria Control Program (NMCP), RBHS launched its first behavior change communication (BCC) campaign on 6 November 2009: "Take Cover" is designed to encourage people all over the country, but especially in RBHS coverage areas, to sleep under insecticide-treated bednets (ITNs). The campaign initially concentrates where ITNs have already been distributed: Nimba, Lofa, Bong, and River Gee Counties. The campaign uses a variety of media to get across its message: UNMIL radio, community radio, bulk SMS texting, posters, brochures, stickers, and word of mouth. To maximize the campaign's effectiveness, RBHS needs to quantify how many people are being reached by the message, and through which media.

This "dipstick" survey's primary objective was to measure how well the ITN campaign is reaching its target population through a very short and simple study: To find out what proportion of women with children under five have been exposed to the Take Cover message and through what media. The survey followed a cluster design, interviewing 133 mothers of children under five in 19 randomly selected communities in RBHS catchment districts in Lofa, Bong, and Nimba Counties (seven women per community) during the week 25-29 April 2010. Two teams of four people (two interviewers and two supervisors) conducted the survey using duplicate recording techniques: a standard paper questionnaire and simultaneously an electronic version on Nokia E63 cell phones. Interviewers showed respondents posters, leaflets, and stickers, and also played clips of the Take Cover jingle and one radio spot to test recognition of campaign components.

The results, summarized in the table below, show that women are hearing messages about sleeping under ITNs and indeed most are sleeping under nets when one is present in the household. However, despite the study area's having been selected because of recent mass ITN distribution, only 71% of the households surveyed had a net present, though that is a significant improvement over the January baseline.

Question	January 2010					April 2010				
	n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)	n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)
ITN in household	133	69	52%	39%	65%	133	94	71%	60%	81%
Respondent slept under ITN last night	69	61	88%	79%	98%	94	81	86%	79%	93%
Under five child slept under ITN last night	69	61	88%	79%	98%	94	82	89%*	83%	94%
Heard any malaria message from chief in the last 4 weeks	133	23	17%	8%	27%	133	26	20%	9%	31%
Heard Take Cover jingle or radio spot	133	79	59%	46%	73%	133	92	69%	57%	82%
Seen any Take Cover printed material	133	74	56%	36%	53%	133	84	63%	51%	76%

**Note: Proportion for children sleeping under a net is weighted by number of U5 in household*

The mass media campaign has extended its reach since January, with a significant increase in the percentage of people who have heard the Take Cover jingle. Exposure to Take Cover posters and other printed material has also expanded. However, community-level progress has been less than expected, with few people hearing messages from chiefs or from gCHVs. Effort in the coming months will need to focus on those community-level interventions.

1 Study context and justification

The Rebuilding Basic Health Services project (RBHS) is supporting the MOHSW to develop a comprehensive system of high-quality health services for all of Liberia through implementation of the National Health Plan and mobilization of communities. RBHS uses a three-pronged strategic approach: 1) strengthening and extending health services to clinics and communities through performance-based contracts to NGO partners; 2) strengthening Liberia's health system in the areas of human resource management, infrastructure, policy development, and monitoring and evaluation; and 3) preventing disease and promoting more healthful behaviors through behavior change communication (BCC) and community mobilization.

Malaria remains the major cause of morbidity and mortality in Liberia. The RBHS approach to improving malaria prevention and control is closely linked to the Operational Plan of the President's Malaria Initiative (PMI) and has been designed following close consultation with the National Malaria Control Program (NMCP). It includes components that address BCC, clinical services at facility and community levels, training, and capacity building and management support of the NMCP. A particular focus is on preventing malaria in children under five and pregnant women, the populations for whom malaria can be most dangerous.

RBHS' first BCC campaign was launched on 6 November 2009: "Take Cover" is designed to encourage people all over the country, but especially in RBHS coverage areas, to sleep under insecticide-treated bednets (ITNs). The campaign initially concentrates where ITNs have already been distributed: Nimba, Lofa, Bong, and River Gee Counties. The campaign uses a variety of media to get across its message: UNMIL radio, community radio, bulk SMS texting, posters, brochures, stickers, and word of mouth. To maximize the campaign's effectiveness, RBHS needs to quantify how many people are being reached by the message, and through which media.

2 Objectives

2.1 Main objective

The study's primary objective was to measure how well the ITN campaign is reaching its target population over the coming year.

2.2 Study questions

1. Of mothers with children under five in the study area, what percentage have been exposed to the Take Cover message?
2. Of people who have been exposed to the message, how have they been exposed (by what media)?
3. Of people who have been exposed, what percentage have understood the message?

Answers to the study questions will help RBHS to analyze the success of the campaign and modify activities to improve its effectiveness.

3 Methods

3.1 Study population

The study population includes all mothers of children under five living in the catchment areas of RBHS facilities in Lofa, Bong, and Nimba Counties, the total catchment population being 765,000.

3.2 Study design

The dipstick study is a two-stage cluster design, with 19 clusters and 7 samples within each cluster. (See sample size calculation below.) A cluster is an enumeration area (EA) as defined during the 2008 Liberia Census. The study area consists of all districts in Lofa, Bong, and Nimba Counties with RRBHS-supported facilities. All EAs within that area were listed, with their populations, and in the first stage of the survey, 19 were selected at random proportional to their populations. Out of the total of 1,758 EAs in the study area, the selected 19 represent about 1%.

The household was the primary sampling unit and unit of analysis. In the second stage, within each cluster, seven households were selected, giving a total of 19×7=133 households.

3.3 Sample size calculation

The sample size was calculated using the following formula:

$$n = \frac{EZ^2 p(1-p)}{d^2}$$

where

E = design effect accounting for a cluster survey design,
Z = 1.96 (for 95% confidence interval),
p = expected proportion with the characteristic of interest, and
d = half the desired width of the confidence interval ($\pm d$).

Since the proportion of the population is not known ahead of time, p is taken to be 50% (worst case). The desired precision is ±10%. The design effect is difficult to estimate in advance, and can vary greatly from survey to survey and even from question to question within the same survey. A general formula is

$$E = 1 + (m-1)\rho$$

where m is the number of samples per cluster (taken here to be 7) and ρ is the intra-cluster correlation coefficient, which also varies across surveys and questions, but an average value for DHS surveys in rural Liberia is 0.06[1], which gives a value of E = 1.4.

Using the above values, the sample size is calculated to be 131, satisfied by the 19×7 (=133) design described above.

3.4 Sampling method

As described above, 19 clusters were selected randomly proportional to population. Within each cluster, one household was selected at random from 2008 Census listings before field work began, then the other six were selected systematically (every third house encountered by walking in an initial random direction) once in the field. However, all study households had to include a woman with children under five, so each household was first screened for the presence of such women. If no such woman was a member of the household, another household was selected by continuing the random walk.

For households with multiple women having children under five, the sampling scheme included a third stage, in which from a given household a single woman was randomly selected from among those who had children under five. The interviewer wrote the names of all qualifying women on separate scraps of paper, then asked someone else to select one piece of paper without seeing the names. In such a case, the

[1] Le, Thanh N. and Vijay K. Verma. *An analysis of sample designs and sampling errors of the Demographic and Health Surveys*. Demographic and Health Surveys analytical reports no. 3. Macro International, 1997.

household may still be considered to be the unit of analysis, since there was exactly one woman interviewed per household.

One survey question related to children under five sleeping under an ITN. For that question, the study population is all children under five in the study area, but from each household only one child under five was selected. If there was only one such child in a household, that child was automatically the subject of the question. If there were two or more children under five, then one was selected randomly (using the same method as described above for selecting the respondent) and that child became the subject of the question.

If a household was visited and no woman with children under five was home, then the closest neighbor was visited and interviewed, substituting for the selected household. (And if no woman at the closest neighbor was home, the next closest neighbor was visited, continuing until the team found someone at home.) In fact, needing to move to the closest neighbor was very rare.

3.5 Study period.

Data collection was done during the week 25-29 April 2010. The study questionnaire did not address a specific recall period, with two exceptions: it asked if the respondent or her child slept under an ITN the previous night, and if she had heard any malaria-related message within the past four weeks.

3.6 Data collection

Data were collected by two teams of four trained people each: two interviewers and two supervisors. Each team covered nine or ten clusters, interviewing seven households per community. The four team members visited each community together, with each interviewer-supervisor pair going separately to individual houses.

Interviewers used a structured questionnaire that was pre-tested in a community an hour outside Monrovia. Written informed consent to be interviewed was obtained from each respondent before beginning the questions. Data were entered in the field using Nokia E63 cell phones loaded with an EpiSurveyor-based version of the questionnaire; for quality assurance, interviewers also entered answers onto a paper form. The questionnaire was written in simple English, but was verbally translated by the interviewer into the local language if the respondent was not comfortable in English. It was not feasible to make written translations of the questionnaire into all possible local languages, nor can most people read local languages.

Recall was assessed by first asking for unprompted responses to questions about malaria messages seen or heard. Only after recording answers did interviewers address recognition through use of multimedia supplementary material. For instance, to test recognition of a jingle and radio spot, interviewers played recordings from the cell phone. Interviewers played the jingle first; the much longer radio spot was played only after asking questions about the jingle. The radio spot led off with a few seconds of the jingle. While radio spots are broadcast in 11 different languages, the survey teams played only the version in the language for which the respondent was most comfortable. Similarly, for recognition of the posters, leaflet, and sticker, interviewers showed full-color, A4-size paper copies, including two posters that were not part of the Take Cover campaign. The posters and other material were displayed simultaneously, pasted on one large sheet of paper:

1. Old MOHSW ITN poster (not Take Cover)
2. Take Cover poster (pregnant woman alone under net)
3. “Fake” ITN poster, used in Ghana, but never in Liberia (not Take Cover)

4. Take Cover poster (couple under net)
5. Take Cover poster (four photos of different net placements)
6. Take Cover leaflet (Brochure)
7. Take Cover sticker

3.7 Data analysis

Data were uploaded from the cell phones into the Web-based Epi-Surveyor and exported into an Excel file to be analyzed using Stata/IC 11.0. Random paper questionnaires were cross-checked against the electronic version entered by cell phone. Frequency distributions of all variables were produced to facilitate data cleaning, and then frequencies and confidence intervals were calculated with Stata. The confidence intervals were adjusted using robust variance estimates to account for the cluster design of the survey. For the question about children under five sleeping a net the previous night, responses were weighted based on the number of children under five who slept in the household the previous night.

While extensive bivariate analysis could not be supported by the small sample size, some selected analysis was conducted for key factors such as county of residence. P-values were adjusted to reflect the cluster design.

4 Ethical considerations

No experimentation was carried out on human subjects. The questionnaire was brief and took an average of 10-15 minutes to administer to each household, causing a minimum of inconvenience for the respondents. No questions were likely to be emotionally disturbing, and there were no physically invasive examinations.

Respondents did not directly benefit from the survey, but the study results will be used to make current project activities more effective, which will benefit the entire study population.

Written informed consent was obtained from each study respondent. Confidentiality of responses will be assured by storing paper questionnaires in a locked file cabinet and by restricting access to the computer database to the two study investigators.

5 Results

No one declined to be interviewed. The total number of respondents, therefore, was exactly the 133 planned. A summary of the survey responses follows; detailed results for each question are shown in Annex 1.

5.1 Household characteristics

Due to the intentionally quick and focused nature of this dipstick survey, few questions not related to malaria and ITNs were asked. Those characteristics are summarized in Table 1 below.

Table 1: Household characteristics

Characteristic	Apr 2010				
	n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)
Respondent's age (mean)	133	30		28	32
Number of children U5 who slept in HH previous night (mean)	133	1.46		1.39	1.52
Pregnant respondents	133	19	14%	7%	22%
Distance from nearest health center	133				
1 hour or less		63	47%		
2 hours or less but more than 1		42	32%		
3 hours or less but more than 2		17	13%		
4 hours or less but more than 3		2	2%		
more than 4 hours		2	2%		
Do not know or no answer		7	5%		
Have radio in household	133	45	34%	21%	46%

5.2 ITN ownership and message exposure

As seen from Table 2 below, 71% of the responding households had at least one ITN in their household, a statistically significant increase from the baseline in January (p=0.027). Across counties, ITN ownership in Lofa remained steady, while Bong and Nimba increased by 21% and 30% respectively. Most respondents and their children under five (86% and 89%, respectively) slept under a net if they had one, nearly identical to the baseline. The survey included only 19 pregnant women, 13 of whom had an ITN; of those 13 pregnant women with ITNs, 85% slept under a net. Though no question about net distribution was asked during the survey, in a number of communities respondents and bystanders said either that nets had never been distributed in their community or that the supply had been insufficient and many households had not received a net.

Table 2: ITN ownership and message exposure

Question	Jan 2010					Apr 2010				
	n	Freq	%	95% Lower CL (%)	95% Upper CL (%)	n	Freq	%	95% Lower CL (%)	95% Upper CL (%)
ITN in household	133	69	52%	39%	65%	133	94	71%	60%	81%
Respondent slept under ITN last night	69	61	88%	79%	98%	94	81	86%	79%	93%
Under five child slept under ITN last night	69	61	88%	79%	98%	94	82	89%*	83%	94%
Pregnant and have net	9	8	89%	52%	100%	17	13	76%	42%	95%
Pregnant and slept under ITN last night	8	8	100 %	63%	100%	13	11	85%	55%	98%

Question	Jan 2010					Apr 2010				
	n	Freq	%	95% Lower CL (%)	95% Upper CL (%)	n	Freq	%	95% Lower CL (%)	95% Upper CL (%)
Heard any malaria message on radio in last 4 weeks	133	45	34%	23%	45%	133	41	31%	23%	38%
Heard any malaria message from chief in the last 4 weeks	133	23	17%	8%	27%	133	26	20%	9%	31%
Heard or seen other malaria messages in last 4 weeks	133	48	36%	24%	48%	133	41	31%	23%	38%
Heard or seen any malaria message (unprompted)	133	70	53%	44%	61%	133	72	54%	43%	65%
Received ITN text message						47	15	32%	18%	46%

**Note: Proportion for children sleeping under a net is weighted by number of U5 in household*

No factors (such as pregnancy, number of children, and age) were significantly associated with having a net or not, though the sample size for the survey was too small in general to conclude that no association exists. However, ITN ownership varied significantly among counties. For instance, ITN ownership for Lofa and Bong counties combined was 60% compared to 86% for Nimba County. In other words, people in Nimba were far more likely to have an ITN than those in Lofa and Bong combined (odds ratio [OR]= 4.0 , $p<0.0005$). On the other hand, the respondent's age was associated with whether she slept under a net the previous night: women older than 25 years were more than twice as likely to have slept under a net as those 25 or younger (OR=2.6, p=0.045). Similarly, children of women older than 25 years were more than three times as likely to have slept under a net as children of women 25 or younger (OR=3.2, p=0.038).

As shown in Table 1, about a third of respondents had a radio in their household. From Table 2, one can also see that about a third of respondents heard a message about malaria on the radio in the past four weeks. As might be expected, people with radios were more likely to have heard a message on the radio than those without (56% versus 25%; OR=3.7, p=0.007), but owning a radio does not ensure hearing a message, nor does not owning a radio preclude hearing a message. The proportion of respondents who heard a malaria message from a chief is still low, increasing only slightly from the January baseline, though the exposure varies by county: 24% of people in Bong and Nimba Counties reported hearing a message from a chief, compared with 7% of those in Lofa (OR=4.0, p=0.047), where no campaign launch with chiefs had yet occurred. (See Figure 1.) About a third of respondents had heard a malaria message in the past four weeks from sources other than radio or from a chief.

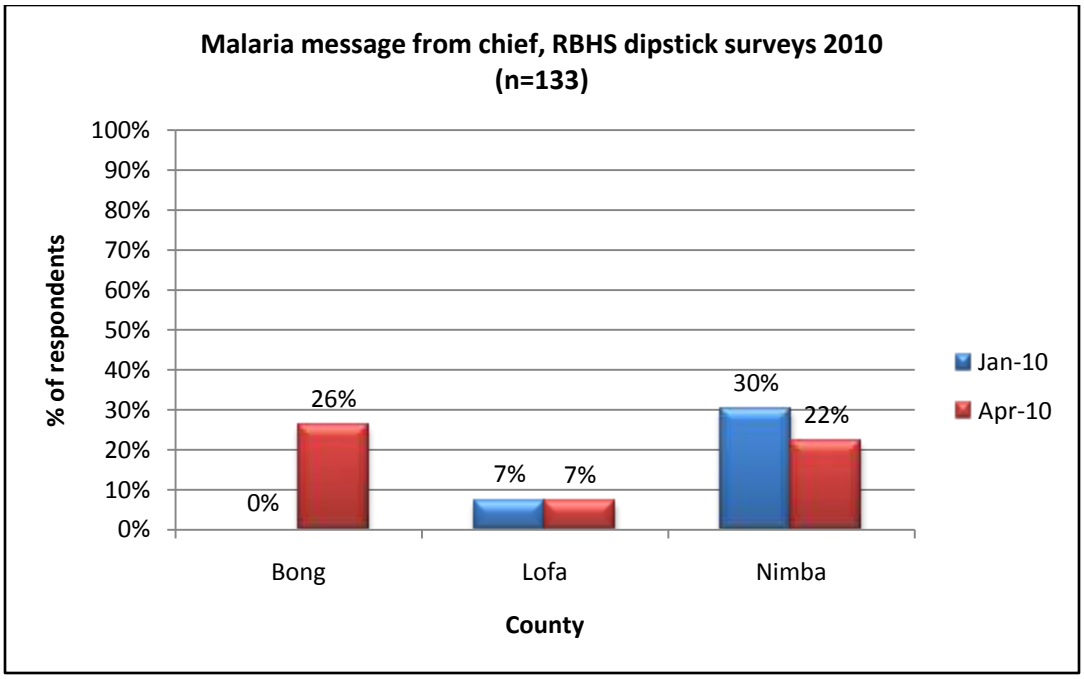

Figure 1

Combining responses from those three questions shows that just over half of respondents had seen or heard (without being prompted) some malaria message. The messages they reported hearing are shown graphically in Figure 2. Note that the percentages add up to more than 100% because some respondents reported more than one message. (Identical messages from the same respondent – i.e., for two different questions – are not counted twice.)

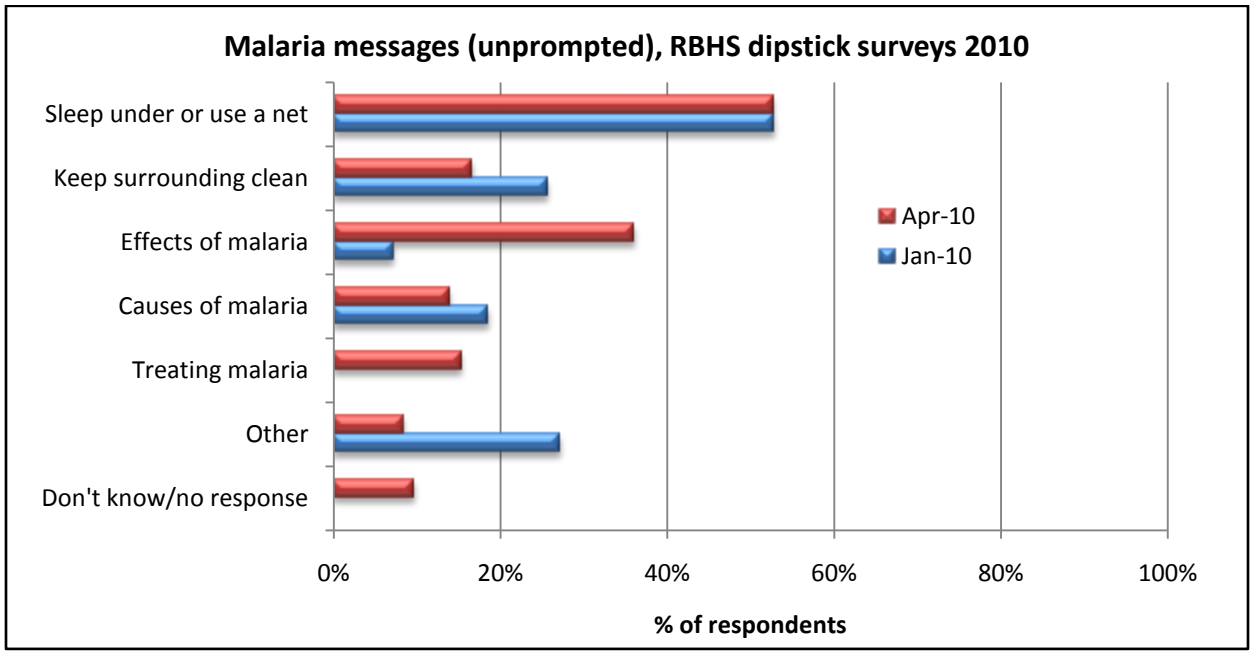

Figure 2

This April survey also included a question on whether respondents had received ITN text messages. About half the respondents reported having a mobile phone in the household, of which approximately three-quarters were Lonestar/MTN and one-quarter Cellcom. While almost a third of the respondents reported having received an ITN text message, only one of those had a Cellcom SIM card. Respondents anecdotally reported that they could not read, so did not know the subject of messages received (whether it was about ITNs or not).

5.3 Exposure to Take Cover messages

Table 3 below summarizes exposure to the Take Cover jingle, radio spot, three posters, leaflet, and sticker, as well as the two non-RBHS posters. The table includes both the January baseline results and the new April results, with the p-value given to assess the statistical significance of any difference in the two. Over two-thirds of respondents reported hearing a Take Cover jingle or radio spot. While 59% reported having heard the radio spot, that figure was about the same as in the January baseline survey. However, many more people recognized the jingle, with over half of the April respondents having heard it, a significant increase from January. Exposure to radio messages was highly dependent on county: Respondents in Bong (80%) and Nimba (77%) were more than six times as likely as those in Lofa (36%) to have heard a Take Cover jingle or radio spot (OR=6.4, p=0.003).

Table 3: Take Cover message exposure

Question	Jan 2010					Apr 2010					p-value (Apr vs Mar)
	n	Freq	%	95% Lower CL (%)	95% Upper CL (%)	n	Freq	%	95% Lower CL (%)	95% Upper CL (%)	
Recognized Take Cover jingle	133	38	29%	18%	39%	133	69	52%	40%	63%	0.003
Recognized Take Cover radio spot	133	76	57%	43%	71%	133	78	59%	46%	71%	0.875
Recognized Take Cover jingle or radio spot	133	79	59%	46%	73%	133	92	69%	57%	82%	0.306
Received ITN text message	NA	NA	NA	NA	NA	65	15	23%	15%	54%	NA
Recognized any poster, etc.	133	74	56%	47%	64%	133	109	82%	74%	88%	<0.0005
Poster A (old)		70	53%	39%	66%		63	47%	39%	56%	0.517
Poster B (Take Cover, pregnant woman)		58	44%	31%	56%		51	38%	30%	47%	0.496
Poster C (fake)		43	32%	22%	43%		25	19%	13%	26%	0.040
Poster D (Take Cover, couple)		47	35%	24%	47%		37	28%	20%	36%	0.302
Poster E (Take Cover, collage)		30	23%	12%	33%		38	29%	21%	37%	0.381
Brochure		24	18%	10%	26%		12	9%	5%	15%	0.077
Sticker		13	10%	5%	14%		1	1%	0%	4%	<0.0005
Seen any Take Cover printed material	133	74	56%	44%	68%	133	84	63%	51%	76%	0.409
Location of last poster seen											
Health facility						109	80	73%			
Friends or neighbors						109	12	11%			

Question	Jan 2010					Apr 2010					p-value (Apr vs Mar)
	n	Freq	%	95% Lower CL (%)	95% Upper CL (%)	n	Freq	%	95% Lower CL (%)	95% Upper CL (%)	
Market						109	1	1%			
Palava hut						109	4	4%			
gCHV/TTM						109	4	4%			
Other						109	10	9%			
Don't know/no answer						109	1	1%			
Seen/heard any Take Cover messages						133	112	84%	75%	94%	
Received Cellcom ITN text message						133	1	1%			

Almost two-thirds of respondents reported seeing some Take Cover printed material. While that proportion represents an increase over the January survey, the difference is not statistically significant. However, whereas last time the fake poster earned as much or more recognition than all but one Take Cover poster, in this April survey all three Take Cover posters were recognized more frequently than the fake poster. Still, the most commonly recognized poster (by nearly half the respondents) was the old ITN poster. See Figure 2 for a graphical summary of these data. By far the most common place to have seen printed material was in health facilities (73%). (Percentages add to more than 100% because of multiple responses from some respondents.)

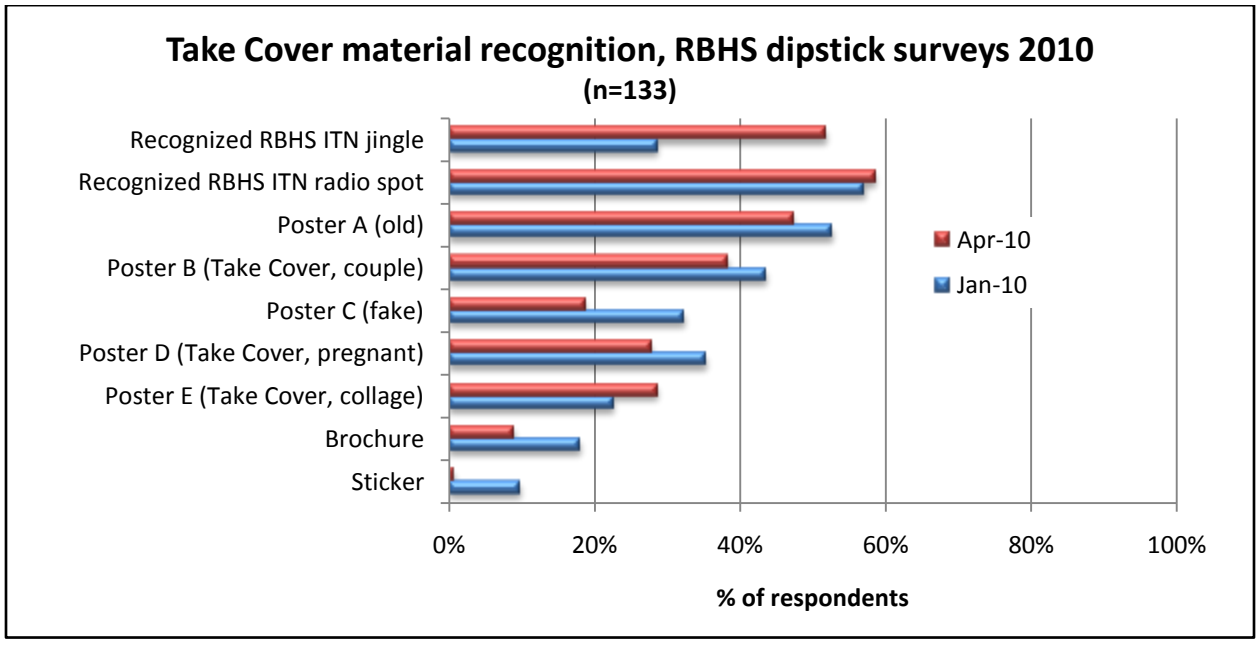

Figure 2

Unlike the January survey, there were no significant differences by county to Take Cover poster recognition, though Nimba (73%) again had higher recognition than Lofa (57%) and Bong (55%). Also unlike the previous survey, there was no significant difference in recognition depending on the age of the respondent. We speculated in the January survey report that people living close to health facilities would be more likely to have seen Take Cover posters, but that proved not to be the case in this survey: Respondents who lived more than an hour from a facility were just as likely to recognize Take Cover material as those living closer.

Finally, note that although a substantial number of people received ITN text messages (the week of the survey happened to coincide with World Malaria Day), virtually all of those were on Lonestar SIM cards; while RBHS has worked with Cellcom to distribute text messages in the evening through the country outside Monrovia, relatively few households had Cellcom SIM cards, and only one of those reported receiving an ITN message.

Annex 1 shows detailed answers to all survey questions.

6 Discussion

6.1 Exposure to ITN messages

The three counties covered by this survey were selected because mass ITN distribution had been done there within the past year. However, while the proportion of ITN-owners has gone up since the January survey, still fewer than three-quarters of households reported having a net, which continues to impose a limitation on the potential impact of the Take Cover campaign and ITN messages in general. Nonetheless, it is certainly good news that at least 86% of respondents and children under five reported having slept under a net the previous night if there was one in the household, as is the high percentage of pregnant women sleeping under nets (though the number of those women remains too small to draw any conclusions).

As with the January survey, comparing malaria message exposure results with the 2009 Liberia Malaria Indicator Survey[2] (MIS) again reveals a puzzle. The MIS was conducted in late 2008-early 2009, and found that 76% of women in the North Central region had seen or heard a message about malaria "in the past few months". This dipstick found that only 54% (unprompted) had seen or heard a message (95% confidence interval, 43%-65%), though the dipstick questions specified "in the past four weeks"; it does not seem likely that "few months" versus "four weeks" would explain such a large difference, especially given the possibilities of recall bias. (While the MIS questions were also unprompted, they were preceded by questions about ITN use, which may have reminded respondents about ITNs, whereas in this dipstick survey, no mention was made of ITNs until the Take Cover jingle was played.) Among women who had seen or heard a malaria message, 38% of MIS respondents had heard the sleep-under-net message as compared with 53% of the dipstick respondents, meaning that in both surveys exactly 29% of all respondents had heard a sleep-under-net message. Notice that the 29% figure is clearly a poor reflector of women's actual understanding, because in both surveys a much higher proportion of women reported sleeping under a net than reported having heard a sleep-under-net message; that is, the message is getting through even if women do not explicitly identify it as such. The relatively low numbers of women reporting having heard radio messages or messages from chiefs suggests that as the Take Cover campaign advances, much progress can continue to be made.

[2] *Liberia Malaria Indicator Survey 2009*. 2009. National Malaria Control Program (NMCP) [Liberia], Ministry of Health and Social Welfare, Liberia Institute of Statistics and Geo-Information Services (LISGIS), and ICF Macro. Monrovia, Liberia.

6.2 Exposure to Take Cover campaign

Because of difficulties discussed below that respondents evidently had in distinguishing among various posters, it is impossible to say with any confidence how many people actually saw a specific poster. More generally, it is hard to pry apart the relative impact of different media. Clearly the sleep-under-net message is getting across, but it is too soon to tell how much of that is due to the Take Cover campaign.

Despite those caveats, there is some reason to think that the campaign has already had an effect, though the evidence is by no means definitive. In particular, the campaign began in Nimba County, with a major event in Sanniquellie on 6 November 2009, and the survey shows that Nimba is generally ahead of the other two counties. Radio stations in Nimba and Bong are actively playing Take Cover spots, but not in Lofa, and respondents in those Nimba and Bong Counties had higher recognition of spots than in Lofa. Chiefs have organized events in Nimba and Bong but not Lofa, and indeed more people in Nimba and Bong heard messages from chiefs than in Lofa. Anecdotal evidence suggests that the Nimba County Health Team (CHT) has been more active than the CHTs in Bong and Lofa about distributing posters and mobilizing CHVs to spread the message, and more people in Nimba recognized Take Cover printed material. It seems clear that the dipstick results presented here are entirely consistent with the varying efforts made in the three counties, suggesting that the results accurately reflect overall exposure.

The relatively low number of respondents who heard a message from chiefs suggests that more work needs to be done to activate chiefs in communities, but the increase from 0% to 26% in Bong over three months, following a campaign launch for chiefs, is encouraging. However, one initial mass meeting in the county is evidently not enough; more local chiefs need to be reached and then reminded to keep pushing the message. It is clear, too, that gCHVs are playing little role so far in spreading the message; that needs to change if the campaign is going to be effective.

6.3 Study limitations

The primary limitation of this study is the same as that of any study assessing message exposure: People may claim to remember seeing a poster or hearing a radio spot just to satisfy the interviewer or because it indeed seems familiar to them, but they may have it mixed up with a non-RBHS message. To mitigate that problem, the dipstick questionnaire included several questions along the lines of "Have you heard any message and what was it?" before presenting posters and radio jingles, to test what respondents could recall, not just recognize. Moreover, while three Take Cover posters were included, so too were an older non-RBHS poster and a "fake" poster that has never been used in a campaign in Liberia. The fact that 19% of respondents reported having seen the fake poster suggests that people were recognizing posters with ITNs, but were not reliably distinguishing among different posters.

Unlike the January survey, women were not in general working on their farms, so were almost always available to be interviewed when teams reached their households. Similarly, while in the January survey a few households spoke only a local language no interviewer spoke, in this survey, interviewers were always able to speak either English or the local language.

6.4 Conclusions

The dipstick survey was effective in answering questions about people's use of bed nets and exposure to the message to sleep under nets. The Take Cover message is spreading, but more work needs to be done at a local community level, especially with chiefs and CHVs.

Annex 1: Detailed responses to survey questions

Q#	Question	January 2010					April 2010				
		n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)	n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)
1	**Respondent's age (mean)**	133	28				133	30		28	32
2	**U5 in HH previous night (mean)**	133					133	1.46		1.39	1.52
4	**Pregnant now**	133	17	13%	8%	20%	133	19	14%	7%	22%
5	**ITN in household**	133	69	52%	39%	65%	133	94	71%	60%	81%
5.1	**Respondent slept under ITN last night**	69	61	88%	79%	98%	94	81	86%	79%	93%
5.2	**Under five child slept under ITN last night**	69	61	88%	79%	98%	94	82	89%*	83%	94%
6	**Distance from nearest health center**						133				
	1 hour or less							63	47%		
	1-2 hours							42	32%		
	2-3 hours							17	13%		
	3-4 hours							2	2%		
	more than 4 hours							2	2%		
	Do not know or No answer							7	5%		
7	**Have radio in household**						133	45	34%	21%	46%
8	**Heard any malaria message on radio in last 4 weeks**	133	45	34%	23%	45%	132	47	36%	21%	50%
8.1	**Last message heard on radio**	45					47				
	Sleep under or use a net		19	42%				21	45%		
	Keep surrounding clean		9	20%				2	4%		
	Effects of malaria		3	7%				10	21%		
	Causes of malaria		6	13%				4	9%		
	Other		7	16%				3	6%		
	Treating malaria		0	0%				6	13%		
	Don't know/no response		4	9%				6	13%		
9	**Heard any malaria message from chief in the last 4 weeks**	133	23	17%	8%	27%	133	26	20%	9%	31%
9.1	**Last message heard from chief**	23					26				
	Sleep under or use a net		16	70%				11	42%		
	Keep surrounding clean		2	9%				2	8%		

Q#	Question	January 2010					April 2010				
		n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)	n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)
	Effects of malaria		0	0%				9	35%		
	Causes of malaria		0	0%				2	8%		
	Other		6	26%				2	8%		
	Treating malaria		0	0%				5	19%		
	Don't know/no response							1	4%		
10	**Recognized RBHS ITN jingle**	133	38	29%	18%	39%	133	69	52%	40%	63%
10.1	**Radio station**	38					69				
	Radio Zorlayea		0	0%				1	1%		
	Radio Gbarnga		0	0%				11	16%		
	Unmil radio station		3	8%				10	14%		
	Totota radio station		2	5%				1	1%		
	Radio Nimba		19	50%				8	12%		
	Radio Tapita ot VOT		2	5%				8	12%		
	BBC		0	0%				1	1%		
	Radio Kehkeima		3	8%				9	13%		
	Canvas of Peace		0	0%				2	3%		
	Zorzor Radio (Radio Life)		5	13%				1	1%		
	Star Radio		0	0%				1	1%		
	Other sources: Children, ring tone		1	3%				2	3%		
	Don't know		6	16%				19	28%		
11	**Recognized RBHS ITN radio spot**	133	76	57%	43%	71%	133	78	59%	46%	71%
11.1	**Radio station**						78				
	Radio Zorlayea							1	1%		
	Radio Gbarnga							11	14%		
	Unmil radio station							12	15%		
	Totota radio station							1	1%		
	Radio Nimba							15	19%		
	Radio Tapita ot VOT							7	9%		
	Radio Kehkeima							14	18%		
	Canvas of Peace							3	4%		
	Zorzor Radio							1	1%		
	Star Radio							1	1%		
	Radio Meanpea							3	4%		

Q#	Question	January 2010					April 2010				
		n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)	n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)
	Kpein Radio							1	1%		
	Bong Mines Radio							1	1%		
	Talking Drum Studio							1	1%		
	From children in community								0%		
	Don't know							15	19%		
12	**Heard or seen other malaria messages in last 4 weeks**	133	48	36%	24%	48%	133	41	31%	23%	38%
	Messages heard	48					41				
12.1	**Sleep under or use a net**		19	40%				21	51%		
	Effects of malaria		4	8%				11	27%		
	Causes of malaria		9	19%				5	12%		
	Treating malaria		0	0%				4	10%		
	Other		19	40%				11	27%		
	Don't know/no response		0	0%				0	0%		
12.2	**Where message last seen or heard**	48					41				
	Health facility		33	69%				19	46%		
	School		1	2%				1	2%		
	Market		1	2%				2	5%		
	gCHV		5	10%				8	20%		
	Community dweller or at home							2	5%		
	NGO or medical staff		6	13%				5	12%		
	Radio		4	8%				8	20%		
	Church Conference		2	4%				1	2%		
13	**Mobile phone in HH**						133	65	49%	35%	62%
13.1	**SIM type**						65				
	Cellcom							19	29%		
	Lone star							49	75%		
	Comium							1	2%		
	Libercell							1	2%		
13.2	**Received ITN text message**						47	15	32%	18%	46%
14	**Recognized any poster**	133	74	56%	47%	64%	133	109	82%	74%	88%
14.1	**Poster A (old)**		70	53%	39%	66%		63	47%	39%	56%

Q#	Question	January 2010					April 2010				
		n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)	n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)
14.1	**Poster B (Take Cover, couple)**		58	44%	31%	56%		51	38%	30%	47%
14.1	**Poster C (fake)**		43	32%	22%	43%		25	19%	13%	26%
14.1	**Poster D (Take Cover, pregnant)**		47	35%	24%	47%		37	28%	20%	36%
14.1	**Poster E (Take Cover, collage)**		30	23%	12%	33%		38	29%	21%	37%
14.1	**Brochure**		24	18%	10%	26%		12	9%	5%	15%
14.1	**Sticker**		13	10%	5%	14%		1	1%	0%	4%
14.2	**Last poster seen**						109				
	Poster A (old)							28	26%		
	Poster B (Take Cover, couple)							26	24%		
	Poster C (fake)							11	10%		
	Poster D (Take Cover, pregnant)							13	12%		
	Poster E (Take Cover, collage)							22	20%		
	Brochure							6	6%		
	Sticker							1	1%		
	Don't know/no answer							2	2%		
14.4	**Where poster last seen**						109				
	Health facility							80	73%		
	Friends or neighbors							12	11%		
	Market							1	1%		
	Palava hut							4	4%		
	gCHV/TTM							4	4%		
	Other							10	9%		
	Don't know/no answer							1	1%		
	Seen any Take Cover printed material	133	74	56%	44%	68%	133	84	63%	51%	76%
	Seen or heard any Take Cover message						133	112	84%	75%	94%
	Seen or heard any malaria message (unprompted)**	133	70	53%	44%	61%	133	72	54%	43%	65%
	Malaria messages heard (unprompted)	70					72				
	Sleep under or use a net		37	53%				38	53%		

Q#	Question	January 2010					April 2010				
		n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)	n	Freq/ mean	%	95% Lower CL (%)	95% Upper CL (%)
	Keep surrounding clean		18	26%				12	17%		
	Effects of malaria		5	7%				26	36%		
	Causes of malaria		13	19%				10	14%		
	Other		19	27%				6	8%		
	Treating malaria		0	0%				11	15%		
	Don't know/no response		0	0%				7	10%		
	Recognized Take Cover jingle or radio spot	133	79	59%	46%	73%	133	92	69%	57%	82%

** Proportion for children sleeping under a net is weighted by number of U5 in household*

***"Any message" refers to Q 9, 10, 13 combined*

Annex 2: Questionnaire and consent form

[see next pages]

RBHS ITN dipstick survey, form updated 20 April 2010

COUNTY	*DISTRICT*	*COMMUNITY/SETTLEMENT*	*DATE (DD/MM/YY):*
INTERVIEWER :		*EA Code:*	*HOUSEHOLD ID#*
		Team Supervisor must sign below to confirm that the questionnaire is satisfactorily completed	
RESPONDENT INFORMATION			
NAME	***NAME***	***SIGNATURE***	***DATE (DD/MM/YY)***

Respondent must be a mother with children under five; if there are more than one available to be interviewed, select one at random.

#	Interview Question	Answers
1.0	How old are you?	_____ years
2.0	How many children under five slept in this household last night?	1= One 2= Two 3= Three 4= Four 5= Five 6=Six 7=Seven or more 9= Don't know/No answer
Ask for the names of each of those children under five, and select one at random; use his or her name in Questions 3.0 and 5.2		
3.0	How old is [NAME]?	1= less than 12 months 2= 12 to 23 months 3=24 to 35 months 4=36 to 47 months 5=48 to 59 months 9= Don't know/No answer
4.0	Are you pregnant now?	0= No 1= Yes 9= Don't know/No answer
5.0	Do you have any treated mosquito nets in this household?	0= No⇨**Q#6** 1= Yes 9= Don't know/No answer
5.1	Did you sleep under a treated mosquito net last night?	0= No 1= Yes 9= Don't know/No answer
5.2	Did [NAME] sleep under a treated mosquito net last night?	0= No 1= Yes 9= Don't know/No answer
6.0	How long does it take to get from your house to the nearest health clinic or hospital?	1= 1 hour or less 2= 1-2 hours (incl. 2, not 1) 3=2-3 hours (incl. 3, not 2) 4=3-4 hours (incl. 4, not 3) 5=more than 4 hours 9= Don't know/No answer
7.0	Do you have a radio in your household?	0= No 1= Yes 9= Don't know/No answer
8.0	Have you heard any information about malaria on any radio in the past four weeks?	0= No ⇨**Q#9** 1= Yes 9= Don't know/No answer
8.1	What was the last message you heard on the radio?	
9.0	Have you heard any message on malaria from a chief in the past four weeks?	0= No ⇨**Q#10** 1= Yes 9= Don't know/No answer
9.1	What was the last message you heard from a chief?	
Play jingle, then ask respondent question 10		
10.0	Have you heard this song before?	0= No ⇨**Q#11** 1= Yes 9= Don't know/No answer
10.1	On what radio station did you hear this song?	
Play radio spot, then ask respondent question 11		
11.0	Have you heard this message before?	0= No ⇨**Q#12** 1= Yes 9= Don't know/No answer
11.1	On what radio station did you hear this message?	
12.0	Have you seen or heard any message about malaria in the last four weeks other than what you've already told me about?	0= No⇨**Q#13** 1= Yes 9= Don't know/No answer
12.1	What was the last message?	
12.2	From what source did you last see or hear it? ***(multiple responses allowed)***	1= Health facility 2= School 3= Market 4= Video club 5= Text message/phone 6= Poster, flier, sticker, etc 7= gCHV or TTM 8= Other 9= Don't know/No answer
12.3	(***If Other, write specific response)***	
13.0	Do you have a mobile phone in this household?	0= No⇨**Q#14.0** 1= Yes 9= Don't know/No answer
13.1	Which sim card(s) are you currently using in your mobile phone? ***(multiple responses allowed)***	1= Lonestar/MTN 2= Cellcom 3= LiberCell 4= Comium 9= Don't know/No answer
13.2	In the past 4 weeks have you received a text message to your phone reminding you to sleep under a mosquito net?	0= No 1= Yes 9= Don't know/No answer
Show simultaneously all five posters, the brochure, and the sticker, then ask respondent question 14		
14.0	Have you seen any of these before?	0= No ⇨**END** 1= Yes 9= Don't know/No answer
14.1	Which ones have you seen before? ***(multiple responses allowed)***	1=Poster A 2=Poster B 3=Poster C 1=Poster D 4=Poster E 5=Brochure 6= Sticker 9= Don't know/NA
14.2	Which was the last one you saw?	1=Poster A 2=Poster B 3=Poster C 1=Poster D 4=Poster E 5=Brochure 6= Sticker 9= Don't know/NA
14.3	Where did you see it? ***(multiple responses allowed)***	1= Health facility 2= School 3= Market 4= Video club 5=Palava hut 6=Friend's/neighbor's/own house 7= gCHV or TTM 8= Other 9= Don't know/No answer
14.4	(***If Other, write specific response)***	

Consent form for RBHS dipstick survey

last updated 30 December 2009

Hello, my name is _____. We are here on behalf of a USAID funded project called RBHS to conduct a survey aimed at learning about the health knowledge and status of people in selected communities.

RBHS is an organization working in collaboration with the Ministry of Health and Social Welfare in Liberia to rebuild basic health services.

Data we will collect during the course of this survey will help NGO's, CHTs, and the Government through the Ministry of Health and Social Welfare to plan and implement appropriate health services. It will also help us to increase the effectiveness of some of our activities.

I would like to ask you some questions regarding health messages you may have seen or heard through various media.

If you agree to participate in this survey, it may take us about 15 minutes and whatever answer you give will be kept strictly confidential and only reported when combined with answers from other families.

Participation in this survey is voluntary. Even if you agree to take part in this survey, you may choose to stop answering any or all questions at any time.

However, we hope that you will agree to take part in this survey since, in fact, your views are important.

Would you be willing to take part in this interview?

No Yes

Community/settlement name _____

District _____ *County* _____

Name of respondent (print) _____

I have read this consent form or someone has explained it to me. I freely agree to be in the survey.

_____ _____

Signature or fingerprint of subject *Interviewer signature*

Date _____/_____/_____

dd *mm* *yyyy*