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

1 September 2010

Liberia

Rebuilding Basic Health Services (RBHS)

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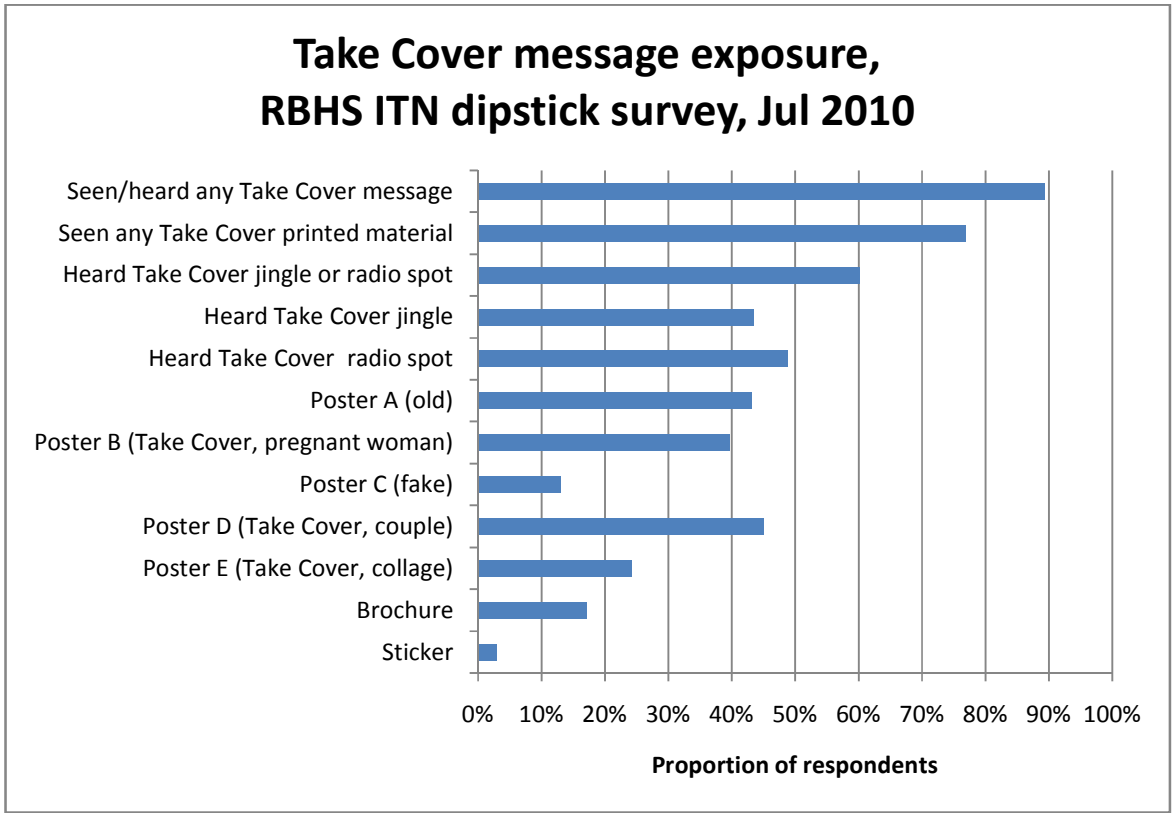
Executive Summary

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 mosquito nets (ITNs). The campaign concentrates where ITNs have already been distributed: Nimba, Lofa, Bong, Grand Cape Mount, 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 169 mothers of children under five in 27 randomly selected communities in RBHS catchment areas in Grand Cape Mount, Lofa, Bong, Nimba, and River Gee Counties during the week 26-31 July 2010. Four teams of three or four people (two interviewers and one or 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 figure below, show that 89% of respondents have seen or heard some Take Cover message. While most women and children who have nets are sleeping under them, only 68% of the households surveyed had a net present, limiting the effect of the campaign, though that is a significant improvement over the January baseline. The mass media campaign has extended its reach since January, with a significant increase in the percentage of people who have been exposed to Take Cover posters and the overall sleep-under-a-net message. Moreover, there is already statistically significant evidence that exposure to the Take Cover message is associated with whether or not children sleep under nets. However, community-level progress continues to be less than expected, with few people hearing messages from chiefs or from gCHVs. Effort in the coming months will need to renew focus on those community-level interventions.


Take Cover message exposure,
RBHS ITN dipstick survey, Jul 2010
Seen/heard any Take Cover message
Seen any Take Cover printed material
Heard Take Cover jingle or radio spot
Heard Take Cover jingle
Heard Take Cover radio spot
Poster A (old)
Poster B (Take Cover, pregnant woman)
Poster C (fake)
Poster D (Take Cover, couple)
Poster E (Take Cover, collage)
Brochure
Sticker
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Proportion of respondents

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 mosquito nets (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 percentages 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 percentages 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 Grand Cape Mount, Lofa, Bong, Nimba, and River Gee Counties, the total catchment

population being just under 600,000 people. Note that this is the first dipstick survey to cover Grand Cape Mount and River Gee Counties.

3.2 Study design

The dipstick study is a two-stage cluster design, with 27 clusters and 6 samples within each cluster. (See sample size calculation below.) A cluster is locality as defined during the 2008 Liberia Census. The study area consists of all localities within the catchment areas of RRBHS-supported facilities. All communities within that area were listed, with their populations, and in the first stage of the survey, 27 were selected at random proportional to their populations. The 27 communities represent less than 1% of the total 3,099 localities in the study area, but almost 2% of the total population.

The household was the primary sampling unit and unit of analysis. In the second stage, within each cluster, six households were selected, giving a total of 27×6=162 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 6) 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 = 1.3. (Note that the design effect specified here is often denoted as "deff", which is the square of "deft", also sometimes referred to as "design effect".)

Using the above values, the sample size is calculated to be 125, requiring 21 clusters. However, because of the expansion from three to five counties and the desire to have to produce at least rough estimates for indicators within individual counties, the number of clusters was increased to 27, for a total sample size of 27×6 =162. ("Rough" was defined as d = 20%, and a factor of 5 – the number of counties – was applied to the formula above.)

3.4 Sampling method

As described above, 27 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 five 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

[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.

member of the household, another household was selected by visiting the next closest house. (And if no woman at the closest neighbor was home, the next closest neighbor was visited, continuing until the team found someone at home.)

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 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.

3.5 Study period

Data collection was done during the week 26-30 July 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 four teams of three or four trained people each: two interviewers and one or two supervisors. Each team covered three to ten clusters, interviewing six households per community. The team members visited each community together, with each interviewer-supervisor pair going separately to individual houses. In teams with a single supervisor, the supervisor moved alternately from one interviewer to the other.

Interviewers used a structured questionnaire that was pre-tested in a communities 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 in Grand Cape Mount and River Gee Counties where the interviewers were new. 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.

Early on in the survey it was discovered that the EpiSurveyor questionnaire had problems in two questions; the skip pattern failed to work and skipped completely by some sub-questions regardless of the answer to the main question. One team did not realize the problem in time, and in one community some responses were missing. To compensate, that team added one household in each of its remaining seven communities (so seven extra households), bringing the total number of households surveyed to 169 rather than the targeted 162.

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 using Stata's svy: logistic function, which adjusted p-values to reflect the cluster design. The same function was used to compare results from this survey with those conducted in January and April.

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 162 planned, plus the seven added as noted in section 3.6 above. 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	July 2010				
	n	Freq/ mean	%	95% confidence interval	
Respondent's age in years (mean)	169	30.3		28.6	32.0
Number of children U5 who slept in HH previous night (mean)	169	1.8		1.6	2.1
Selected child's age in years (mean)	168	2.4		2.1	2.7
Pregnant respondents	168	24	**14%**	9%	19%
Distance from nearest health center	169				
1 hour or less		76	**45%**		
2 hours or less but more than 1		36	**21%**		
3 hours or less but more than 2		51	**30%**		
4 hours or less but more than 3		4	**2%**		
More than 4 hours		0	**0%**		
Do not know or no answer		2	**1%**		
Have radio in household	169	60	**36%**	25%	46%
Mobile phone in HH	168	44	**26%**	15%	37%

5.2 ITN ownership and message exposure

As seen from Table 2 below, over two-thirds of the responding households had at least one ITN in their household. Most respondents and their children under five (92% and 81%, respectively) slept under a net if they had one. Of the 24 pregnant women surveyed, two-thirds had an ITN in the house and all of those reported sleeping under a net. No factors were significantly associated with whether respondents or children slept under a net.

Table 2: ITN ownership and message exposure

Question	July 2010				
	n	Freq	%	95% confidence interval	
ITN in household	169	115	**68%**	57%	79%
Respondent slept under ITN last night	109	100	**92%**	85%	98%
Under five child slept under ITN last night	109	93	**81%**	68%	94%
Pregnant and have net	24	16	**67%**	43%	91%
Pregnant and slept under ITN last night	16	16	**100%**	79%	100%
Heard any malaria message on radio in last 4 weeks	167	68	**41%**	30%	51%
Heard any malaria message from chief in the last 4 weeks	160	25	**16%**	5%	26%
Heard or seen other malaria messages in last 4 weeks	168	69	**41%**	32%	51%
Heard any malaria message (unprompted)	169	112	**66%**	55%	77%
Received ITN text message	20	3	**15%**	3%	38%

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

Few 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. ITN ownership was consistent among most counties (61%-73%) with the exception of Lofa, in which all 12 households had ITNs, a significantly higher proportion than in the other counties (p=0.010).

As shown in Table 1, over a third of respondents had a radio in their household. From Table 2, one can also see that 41% of respondents had 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 (31% versus 59%; odds ratio [OR]=3.1, p=0.004), 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 was still low, only 16%; the exposure varied by county – from 8% in Bong to 30% in River Gee – but not significantly. A number of respondents also reported hearing or seeing malaria messages from sources other than radios and chiefs: 41%, three-quarters of whom got the message at a health facility, with most of the rest (a total of 11 people) obtaining the message from gCHVs.

Combining responses from those three questions shows that two-thirds of respondents had seen or heard (without being prompted) some malaria message. The messages they reported hearing are shown graphically in Figure 1. 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.)

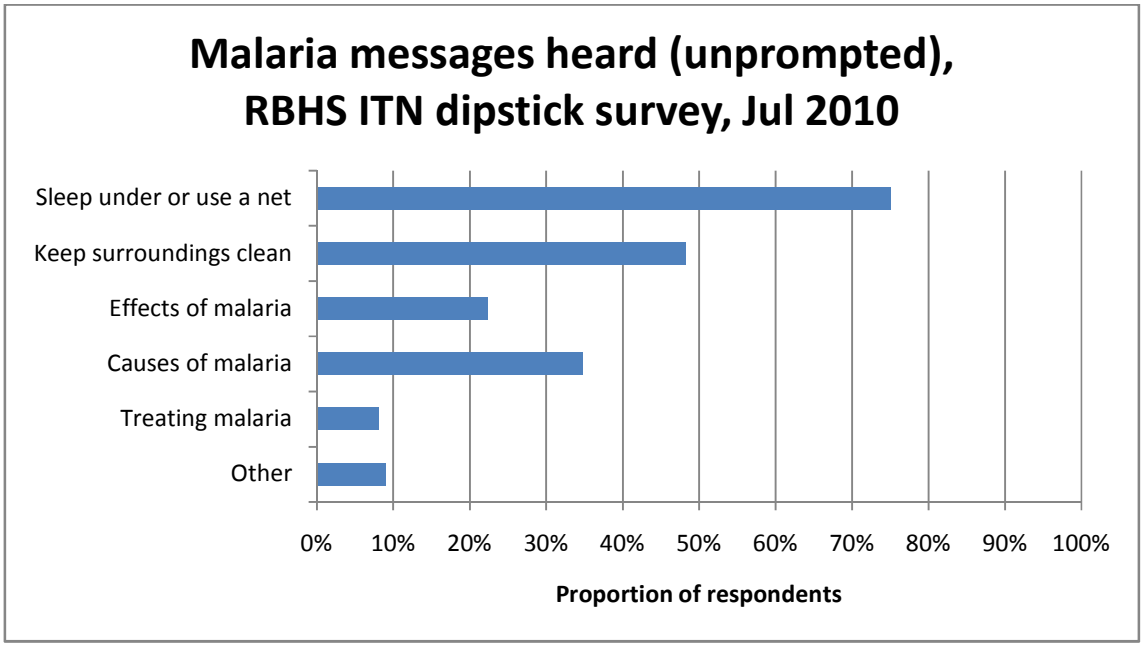


Figure 1

The survey also included a question on whether respondents had received ITN text messages. Only 26% of respondents reported having a mobile phone in the household, of which 73% used Lonestar/MTN, 11% used Cellcom, and one household had both. (The remainder did not know the SIM card.) Of respondents who could say whether they had received a text message about malaria (only 20 of 44), only 3 reported having received such a message, and all of those were from Lonestar. 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, brochure, and sticker, as well as the two non-RBHS posters. Three-fifths of respondents reported hearing a Take Cover jingle or radio spot, even though only 36% have a radio in the house. Exposure to radio messages was highly dependent on county: Respondents in Grand Cape Mount (100%) and Nimba (74%) were five times as likely as those in Lofa (33%), River Gee (40%), or Bong (50%) to have heard a Take Cover jingle or radio spot (OR=5.1, p=0.001).

Table 3: Take Cover message exposure

Question	July 2010				
	n	Freq	%	95% confidence interval	
Heard Take Cover jingle	168	73	**43%**	36%	61%
Heard Take Cover radio spot	168	82	**49%**	36%	61%
Heard Take Cover jingle or radio spot	168	101	**60%**	49%	71%
Recognized any poster	169	146	**86%**	80%	93%
Poster A (old)		73	**43%**	33%	53%
Poster B (Take Cover, pregnant woman)		67	**40%**	30%	49%
Poster C (fake)		22	**13%**	8%	18%
Poster D (Take Cover, couple)		76	**45%**	37%	53%
Poster E (Take Cover, collage)		41	**24%**	18%	31%
Brochure		29	**17%**	10%	25%
Sticker		5	**3%**	0%	5%
Seen any Take Cover printed material	169	130	**77%**	71%	83%
Location of last poster seen	143				
Health facility		122	**85%**		
Neighbor's or own house		27	**19%**		
Market		0	**0%**		
Palava hut		3	**2%**		
gCHV/TTM		3	**2%**		
Other		0	**0%**		
Don't know/no answer		0	**0%**		
Seen/heard any Take Cover message	169	151	**89%**	84%	95%

Over three-quarters of respondents reported seeing some Take Cover printed material. Moreover, respondents were far more likely to recognize a Take Cover poster than the fake poster, suggesting that Take Cover recognition is real. (Percentages add to more than 100% because of multiple responses from some respondents.) 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 (85%), but nearly one-fifth of respondents had a poster in their own home or had seen one in a friend's or neighbor's home. Of those 27 respondents, it was overwhelmingly Take Cover material that they had seen (93%). Although it was not part of the survey, interviewers typically asked to see the poster if the respondent said it was in her own house, and invariably it was in fact a Take Cover poster, though not always of the same design as specified by the

respondent (e.g., the respondent may have identified Poster D as being on her wall, but it was actually Poster B).

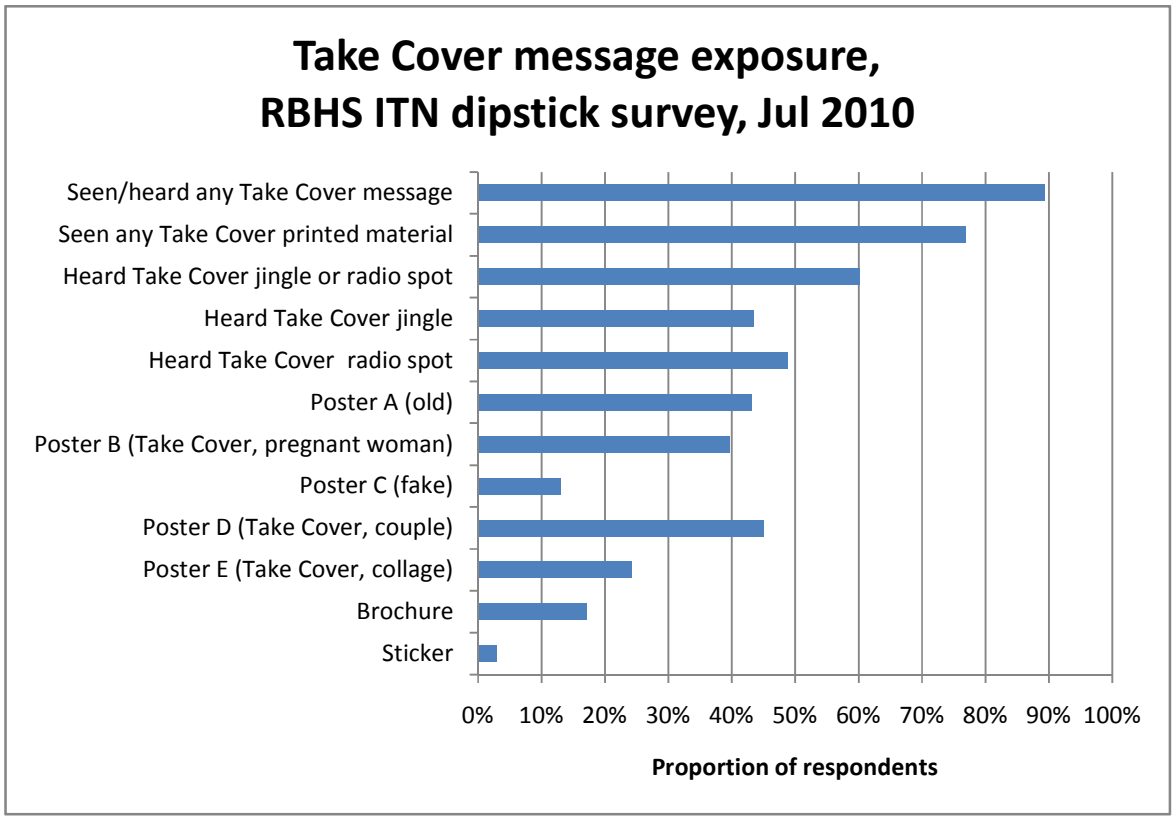


Figure 2

There were no significant differences by county to Take Cover poster recognition, with recognition ranging from 72% (Bong) to 83% (Lofa). In fact, no variable measured during the survey was significantly associated with poster recognition.

Overall, 89% of respondents had been exposed to either radio or print Take Cover messages, and exposure was consistently high within each county. Even with that high exposure, Grand Cape Mount and Nimba Counties stood out, with virtually everyone (99%) in those two counties exposed versus 82% in the other three counties, a significant difference (p=0.012).

The purpose of exposing people to the Take Cover campaign is ultimately to result in changed behavior (increased sleeping under ITNs). Are there any early signs of such change? More precisely, is there any association with Take Cover exposure and sleeping under a net? The answer appears to be yes: In households where respondents had seen or heard some Take Cover message, children were significantly more likely to have slept under an ITN the night before than those who were unexposed (88% vs. 64%, OR=7.3, p=0.008).

5.4 Comparison of survey results over time

Two factors make it difficult to make accurate comparisons among the three dipstick surveys conducted so far: 1) subtle improvements in the way some questions are asked since the first survey and 2) the addition of two new counties to the latest survey. The first factor is relatively minor, since addressing it means simply not being able to compare results for certain questions. The second factor is more

problematic, since the study populations changed, and differences in survey results may be due at least in part to differences in the study populations. Figure 3 compares key results of the most recent dipstick survey over all counties with the same results restricted to Bong, Lofa, and Nimba Counties (the three counties covered in the first two surveys). There are no statistically significant differences between the two sets of data, and qualitatively the data also appear similar, which means that it should be valid to compare the full July survey results with results from the January and April surveys.

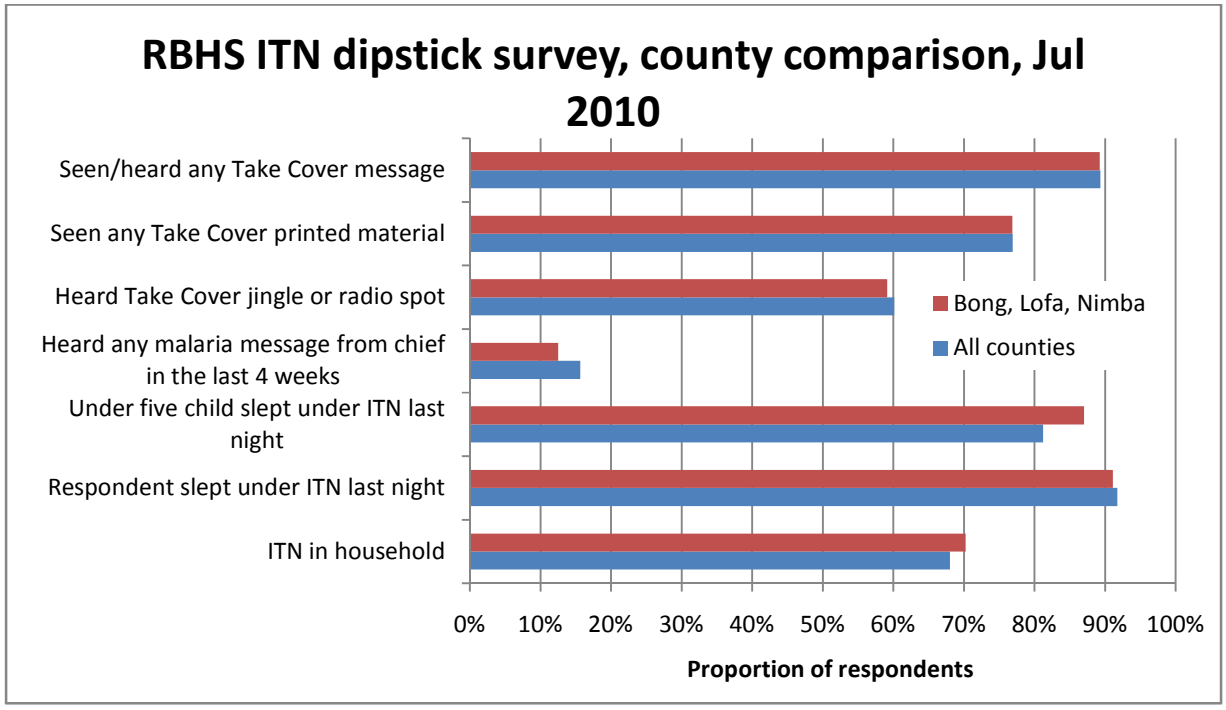


Figure 3

The three main Take Cover exposure indicators are compared in Figure 4 below for each of the three dipstick surveys to date. There is a clear upward trend in exposure to the Take Cover posters, which also drives the increase in exposure to any Take Cover message, despite the drop in coverage of the jingle and radio spot. While Lofa and Nimba radio exposure stayed about the same from April to July, coverage in Bong County dropped precipitously from 80% in April to 50% in July. There is no obvious explanation for the coverage drop in Bong – no reports of radio station down times as in other counties in the past, for instance.

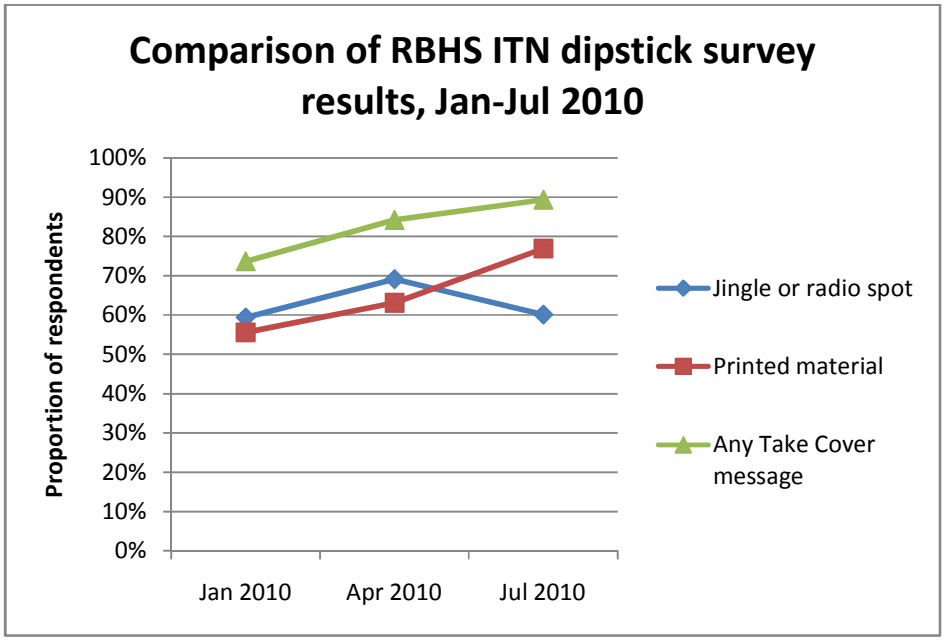


Figure 4

Table 4 shows a more detailed comparison across surveys for key variables. When the odds ratio (OR) and p-value (p) are shown, the reference group is always the baseline dipstick survey in January 2010. From the table, one can see that respondents in the latest survey were significantly more likely to have seen any Take Cover print material (primarily posters) and to have seen or heard any Take Cover message, quantitatively confirming what seems evident from Figure 4. Moreover, respondents were significantly more likely to have an ITN in the household. They were also more likely to have slept under a net the previous night, but those proportions are already too high for a difference to be significant with the dipstick's small sample size. While respondents were more likely to have seen some Take Cover poster, no one poster was significantly more recognized in July than in January. However, the fake poster (poster C), which has never appeared in Liberia, was recognized by significantly fewer respondents in July (13%) than in January (32%) (OR=0.31, p<0.0005).

Table 4: Comparison of indicators over time

Indicator	n	Freq	%	OR	p
Seen any Take Cover print material					
Jan-10	133	74	56%		
Apr-10	133	84	63%	1.33	0.400
Jul-10	169	130	77%	2.58	0.001
Heard Take Cover jingle or radio spot					
Jan-10	133	79	59%		
Apr-10	133	92	69%	1.53	0.266
Jul-10	168	101	60%	1.03	0.932
Seen/heard any Take Cover message					
Jan-10	133	98	74%		
Apr-10	133	112	84%	1.90	0.134
Jul-10	169	151	89%	3.00	0.006

Indicator	n	Freq	%	OR	p
Have ITN in house					
Jan-10	133	69	52%		
Apr-10	133	94	71%	2.24	0.019
Jul-10	169	115	68%	1.98	0.050
Respondent slept under net					
Jan-10	69	61	88%		
Apr-10	94	81	86%	0.82	0.704
Jul-10	109	100	92%	1.46	0.527

The decrease in recognition of the fake poster strengthens the conclusion that recognition of Take Cover posters has actually increased. Further supporting that conclusion comes from comparing across dipstick surveys the number of respondents who reported having heard – unprompted, before being shown Take Cover posters or listening to the jingle – that they should sleep under a net: In January, 53% of respondents reported hearing that message, versus 75% in July (OR=2.7, p=0.004).

6 Discussion

6.1 Exposure to ITN messages

The five 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 70% 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 92% of respondents and 81% of children under five reported having slept under a net the previous night if there was one in the household, as is the fact that all pregnant women who had ITNs slept under them.

6.2 Exposure to Take Cover campaign

As documented in sections 5.3 and 5.4 above, there are reasons to think that the Take Cover campaign is increasingly effective, as measured both by how many people have been exposed to Take Cover messages and the association between having heard a message and children actually sleeping under a net. However, great weight should not be put on the latter association; while the effect was quite strong, the number of respondents who were not exposed to Take Cover messages was small, as was the number of children who did not sleep under a net, and a change in just one or two children would have eliminated the effect. Moreover, there was no similar association between exposure to Take Cover and respondents themselves sleeping under a net, which seems unlikely if the association with children sleeping under a net was real.

The relatively low numbers of women reporting (unprompted) having heard radio messages (41%) or messages from chiefs (16%) suggests that as the Take Cover campaign advances, much progress can continue to be made, and that chiefs need to be more active in spreading the word in their communities. Similarly, it remains true that very few people are hearing the sleep-under-a-net message from gCHVs (7%); as gCHVs training and mobilization roll out across the country, they need to start actively carrying that message.

The decrease in exposure to the Take Cover jingle and radio spot in Bong County is so far inexplicable. However, such findings are one of the prime objectives of these surveys, to alert the RBHS BCC team to gaps in the campaign, and allow them to pinpoint the cause of the gap and take measures to fill it.

Few people in the campaign's coverage area have a Cellcom SIM card, rendering the text-messaging component of the campaign ineffective, with not a single person having heard a Cellcom-dispatched message. Expanding or shifting to Lonestar would probably have little effect, either, given levels of illiteracy.

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. As noted in section 5.4, the fact that only 13% of respondents report having seen the fake poster versus 40% and 45% for two of the Take Cover posters, suggests that people are now distinguishing among different posters.

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 the community level, especially with chiefs and CHVs. The text-message component of the campaign is not effective, and given the demographics in the RBHS catchment area, should probably be dropped.

Annex 1: Detailed responses to survey questions

Q#	Question	January 2010					April 2010					July 2010				
		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL	
1	Respondent's age (mean)	133	28				133	30		28	32	169	30.3		28.6	32.0
2	Number of children U5 who slept in HH previous night (mean)	133					133	1.5		1.4	1.5	169	1.8		1.6	2.1
3	Age of selected child in years (mean)											168	2.4		2.1	2.7
4	Pregnant respondents	133	17	13%	8%	20%	133	19	14%	7%	22%	168	24	14%	9%	19%
5	ITN in household	133	69	52%	39%	65%	133	94	71%	60%	81%	169	115	68%	57%	79%
5.1	Respondent slept under ITN last night	69	61	88%	79%	98%	94	81	86%	79%	93%	109	100	92%	85%	98%
5.2	Under five child slept under ITN last night	69	61	88%	79%	98%	94	82	89%*	83%	94%	109	93	81%*	68%	94%
6	Distance from nearest health center						133					169				
	1 hour or less							63	47%				76	45%		
	2 hours or less but more than 1							42	32%				36	21%		
	3 hours or less but more than 2							17	13%				51	30%		
	4 hours or less but more than 3							2	2%				4	2%		
	More than 4 hours							2	2%				0	0%		
	Do not know or no answer							7	5%				2	1%		
7	Have radio in household						133	45	34%	21%	46%	169	60	36%	25%	46%
8	Heard any malaria message on radio in last 4 weeks	133	45	34%	23%	45%	133	47	35%	21%	50%	167	68	41%	30%	51%
8.1	Last message heard on radio	45					47					68				
	Sleep under or use a net		19	42%				21	45%				50	74%		
	Keep surrounding clean		9	20%				2	4%				22	32%		
	Effects of malaria		3	7%				10	21%				12	18%		
	Causes of malaria		6	13%				4	9%				20	29%		

Q#	Question	January 2010					April 2010					July 2010				
		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL	
	Treating malaria		0	0%				6	13%				1	1%		
	Other		7	16%				3	6%				5	7%		
	Don't know/no response		4	9%				6	13%				3	4%		
9	Heard any malaria message from chief in the last 4 weeks	133	23	17%	8%	27%	133	26	20%	9%	31%	160	25	16%	5%	26%
9.1	Last message heard from chief	23					26					25				
	Sleep under or use a net		16	70%				11	42%				14	56%		
	Keep surrounding clean		2	9%				2	8%				16	64%		
	Effects of malaria		0	0%				9	35%				0	0%		
	Causes of malaria		0	0%				2	8%				5	20%		
	Treating malaria		0	0%				5	19%				4	16%		
	Other		6	26%				2	8%				1	4%		
	Don't know/no response							1	4%				0	0%		
10	Heard Take Cover jingle	133	38	29%	18%	39%	133	69	52%	40%	63%	168	73	43%	32%	55%
10.1	Radio station	38					69					73				
	Radio Zorlayea		0	0%				1	1%					0%		
	Radio Gbarnga		0	0%				11	16%				4	5%		
	Unmil radio station		3	8%				10	14%				4	5%		
	Totota radio station		2	5%				1	1%					0%		
	Radio Nimba		19	50%				8	12%				15	21%		
	Radio Tapita ot VOT		2	5%				8	12%					0%		
	BBC		0	0%				1	1%					0%		
	Radio Kehkeima		3	8%				9	13%					0%		
	Canvas of Peace		0	0%				2	3%					0%		
	Zorzor Radio (Radio Life)		5	13%				1	1%					0%		
	Star Radio		0	0%				1	1%					0%		
	ELBC												1	1%		

Q#	Question	January 2010					April 2010					July 2010				
		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL	
	Radio Life												1	1%		
	Radio Piso												1	1%		
	Radio Cape Mount												13	18%		
	Radio Gee												2	3%		
	Other sources: Children, ring tone		1	3%				2	3%				19	26%		
	Don't know		6	16%				19	28%				21	29%		
11	Heard Take Cover radio spot	133	76	57%	43%	71%	133	78	59%	46%	71%	168	82	49%	36%	61%
11.1	Radio station						78					82				
	Radio Zorlayea							1	1%					0%		
	Radio Gbarnga							11	14%				3	4%		
	Unmil radio station							12	15%				3	4%		
	Totota radio station							1	1%					0%		
	Radio Nimba							15	19%				19	23%		
	Radio Tapita ot VOT							7	9%					0%		
	Radio Kehkeima							14	18%					0%		
	Canvas of Peace							3	4%					0%		
	Zorzor Radio							1	1%					0%		
	Star Radio							1	1%					0%		
	Radio Meanpea							3	4%					0%		
	Kpein Radio							1	1%					0%		
	Bong Mines Radio							1	1%					0%		
	Talking Drum Studio							1	1%					0%		
	From clildren in community								0%					0%		
	ELBC												1	1%		
	Radio Piso												1	1%		
	Radio Cape Mount												12	15%		
	Radio Gee												7	9%		

Q#	Question	January 2010					April 2010					July 2010				
		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL	
	Other stations												19	23%		
	Don't know							15	19%				22	27%		
12	Heard or seen other malaria messages in last 4 weeks	133	48	36%	24%	48%	133	41	31%	23%	38%	168	69	41%	32%	51%
12.1	Messages heard	48					41					69				
	Sleep under or use a net		19	40%				21	51%				48	70%		
	Keep surrounding clean												33	48%		
	Effects of malaria		4	8%				11	27%				15	22%		
	Causes of malaria		9	19%				5	12%				18	26%		
	Treating malaria		0	0%				4	10%				4	6%		
	Other		19	40%				11	27%				4	6%		
	Don't know/no response		0	0%				0	0%				1	1%		
12.2	Where message last seen or heard	48					41					69				
	Health facility		33	69%				19	46%				52	75%		
	School		1	2%				1	2%					0%		
	Market		1	2%				2	5%					0%		
	gCHV		5	10%				8	20%				11	16%		
	Community dweller or at home							2	5%				1	1%		
	NGO or medical staff		6	13%				5	12%				1	1%		
	Radio		4	8%				8	20%				4	6%		
	Church Conference		2	4%				1	2%				1	1%		
	Others												1	1%		
13	Mobile phone in HH						133	65	49%	35%	62%	168	44	26%	15%	37%
13.1	SIM type						65					44				
	Cellcom							19	29%				6	14%		
	Lone star							49	75%				33	75%		
	Comium							1	2%				0	0%		

Q#	Question	January 2010					April 2010					July 2010				
		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL	
	Libercell							1	2%				0	0%		
	Don't know/no response												6	14%		
13.2	Received ITN text message						47	15	32%	18%	46%	20	3	15%	3%	38%
14	Recognized any poster	133	74	56%	47%	64%	133	109	82%	72%	92%	169	146	86%	80%	93%
14.1	Poster A (old)	133	70	53%	39%	66%	133	63	47%	35%	60%	169	73	43%	33%	53%
14.1	Poster B (Take Cover, pregnant woman)	133	58	44%	31%	56%	133	51	38%	29%	47%	169	67	40%	30%	49%
14.1	Poster C (fake)	133	43	32%	22%	43%	133	25	19%	12%	26%	169	22	13%	8%	18%
14.1	Poster D (Take Cover, couple)	133	47	35%	24%	47%	133	37	28%	17%	39%	169	76	45%	37%	53%
14.1	Poster E (Take Cover, collage)	133	30	23%	12%	33%	133	38	29%	15%	42%	169	41	24%	18%	31%
14.1	Brochure	133	24	18%	10%	26%	133	12	9%	4%	15%	169	29	17%	10%	25%
14.1	Sticker	133	13	10%	5%	14%	133	1	1%	0%	4%	169	5	3%	0%	5%
14.2	Last poster seen						109					143				
	Poster A (old)							28	26%				27	19%		
	Poster B (Take Cover, pregnant woman)							26	24%				36	25%		
	Poster C (fake)							11	10%				7	5%		
	Poster D (Take Cover, couple)							13	12%				39	27%		
	Poster E (Take Cover, collage)							22	20%				17	12%		
	Brochure							6	6%				14	10%		
	Sticker							1	1%				3	2%		
	Don't know/no answer							2	2%				3	2%		
14.4	Location of last poster seen						109					143				
	Health facility							80	73%				122	85%		
	Neighbor's or own house							12	11%				27	19%		
	Market							1	1%				0	0%		
	Palava hut							4	4%				3	2%		

Q#	Question	January 2010					April 2010					July 2010				
		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL		n	Freq/ mean	%	95% CL	
	gCHV/TTM							4	4%				3	2%		
	Other							10	9%				0	0%		
	Don't know/no answer							1	1%				0	0%		
	Seen any Take Cover printed material	133	74	56%	44%	68%	133	84	63%	51%	76%	169	130	77%	71%	83%
	Seen/heard any Take Cover message	133	98	74%	62%	85%	133	112	84%	75%	94%	169	151	89%	84%	95%
	Heard any malaria message** (unprompted)	133	70	53%	44%	61%	133	72	54%	43%	65%	169	112	66%	55%	77%
	Malaria messages heard ** (unprompted)	70					72					112				
	Sleep under or use a net		37	53%				38	53%				84	75%		
	Keep surroundings clean		18	26%				12	17%				54	48%		
	Effects of malaria		5	7%				26	36%				25	22%		
	Causes of malaria		13	19%				10	14%				39	35%		
	Treating malaria		0	0%				11	15%				9	8%		
	Other		19	27%				6	8%				10	9%		
	Don't know/no response		0	0%				7	10%				1	1%		
	Heard Take Cover jingle or radio spot	133	79	59%	46%	73%	133	92	69%	57%	82%	168	101	60%	49%	71%
	Pregnant and have net	9	8	89%	52%	100%	17	13	76%	42%	95%	24	16	67%	43%	91%
	Pregnant and slept under ITN last night	8	8	100%	63%	100%	13	11	85%	55%	98%	16	16	100%	79%	100%
	Received Cellcom ITN text message						133	1	1%			2	0	0%		

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

***"Any message" refers to Questions 8, 9, 12 combined*

Annex 2: Questionnaire and consent form

[see next pages]

RBHS ITN dipstick survey, form updated 07 July 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?	1= Radio Nimba 2 = Radio Life 3 = Voice of Reconciliation 4 = Radio Piso 5 = Voice of Tappita 6 = Radio Gbarnga 7 = Radio Cape Mount 8 = ELBC 9= Don't know/ can't remember 10 = UNMIL 11 = Other stations (incorrect)
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?	1= Radio Nimba 2 = Radio Life 3 = Voice of Reconciliation 4 = Radio Piso 5 = Voice of Tappita 6 = Radio Gbarnga 7 = Radio Cape Mount 8 = ELBC 9= Don't know/ can't remember 10 = UNMIL 11 = Other stations (incorrect)
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*