



**Eastern Region LLIN mass-distribution campaign, December 2010
Process Evaluation**

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ProMPT

Malaria Prevention and Treatment in Ghana

Eastern Region LLIN mass-distribution campaign, December 2010
Process evaluation

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Cover page photo: Logistics Officer Mary Brenn-Bruce reviews her stock of LLINs at the District Directorate of Health office in Akyemansa, Eastern Region.

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Acronyms

ADDRO	Anglican Diocesan Development and Relief Organization
AMP	Alliance for Malaria Prevention
BCC	Behavior change communication
CHPS	Community-based Health Planning and Services
CMS	Central Medical Stores
DCE	District Chief Executive
DDHS	District Director of Health Services
DDNS/PH	District Director of Nursing Services/Public Health
DHMT	District Health Management Team
DHS	Demographic and Health Survey
GHS	Ghana Health Service
ITN	Insecticide-treated net
JSI	John Snow, Inc.
LLIN	Long-lasting insecticidal net
NGO	Non-governmental organization
NMCP	National Malaria Control Program
PMI	President's Malaria Initiative
PPS	Pre-positioning sites
ProMPT	The Promoting Malaria Prevention and Treatment Project
RHMT	Regional Health Management Team
RMS	Regional Medical Stores
URC	University Research Co., LLC
USAID	The United States Agency for International Development
WHO	World Health Organization

1 Background

This report presents results from a process evaluation of the universal long-lasting insecticidal net distribution campaign carried out in 10 districts of Ghana's Eastern Region during December 2010 and January 2011.

In Ghana, distribution of insecticide treated nets (ITNs) and long-lasting insecticidal nets (LLINs) has been a key malaria prevention and control strategy for many years. Until recently, this strategy was implemented mainly through social marketing using vouchers, discounted ITN or LLIN sales at health facilities, and distribution through measles campaigns. All these approaches targeted the two population groups most likely to suffer severe consequences or die from malaria: children under 5 years of age and pregnant women. The combined strategy of social marketing using vouchers, discounted sales and distribution through measles campaigns led to a significant improvement in net coverage: the percentage of children under 5 and pregnant women sleeping under an ITN rose from 4% in 2003 to 28% in 2008 according to the 2008 DHS. After five years of promoting this strategy, ITN coverage leveled off at about 28% of children under 5 and 20% of pregnant women respectively.

In 2010, in an attempt to quickly boost LLIN coverage and utilization to a much higher level, the National Malaria Control Program (NMCP) switched to mass distribution. This strategy began with a distribution to pregnant women and children under 5 in the Northern Region in May. With support from various local and international partners, the NMCP distributed over half a million LLINs. During this campaign, paid volunteers distributed nets door-to-door and hung them in recipient households immediately. The effect of immediate hang-up on use is still under study, but it is hoped that the strategy will lead to significantly higher utilization.

As more LLINs became available, the NMCP switched its strategy to universal coverage, defined as one LLIN for every two people in every household. As the name implies, the objective of universal coverage is to ensure that all members of the population sleep under an LLIN regardless of age or sex. Universal coverage is consistent with the goal of malaria eradication: rather than decreasing morbidity and mortality by protecting only those most vulnerable, universal coverage aims to interrupt transmission by eliminating the human reservoir of parasites.

This report presents the results of a process evaluation of the first universal coverage campaign, carried out in December 2010 and January 2011 in Ghana's Eastern Region. The NMCP and partners distributed and hung nearly 437,000 LLINs in 10 of the region's 21 districts. As in Northern Region, volunteers hung the nets in each household at the time of distribution. However, the Eastern Region campaign relied for the first time upon unpaid volunteers recruited from recipient communities.

For 2011, the NMCP has developed an ambitious plan to achieve universal coverage nationwide. In addition to the remaining 11 districts in Eastern Region, the plan calls for LLIN distribution in Volta, Central, and Western Regions during the first half of the year. Ashanti, Northern, Upper East and Upper West are to follow from September to December. Lessons learned from the Eastern Region should improve the efficiency and success of these pending campaigns.

2 Objectives

This process evaluation had two overall objectives:

1. Assess what went well and what problems occurred during the Eastern Region campaign
2. Use lessons learned to improve planning and execution of upcoming campaigns

Achieving objective 1 requires considering questions related to different aspects of the campaign, including planning and management, budgeting, community mobilization, behavior change communication (BCC), logistics, inventory control (security of nets), and use of human resources.

3 Evaluation methods

The principal investigator (PI), Dr. Steven Harvey from University Research Co., LLC was in Ghana to carry out the evaluation from November 29 – December 10, 2010. The evaluation was mostly qualitative. It included review of instruments developed for process evaluation of LLIN distribution campaigns by members of the Alliance for Malaria Prevention (AMP) in several other countries. Documents related to the Eastern Region campaign – including plans, monitoring instruments, reports, allocations of LLINs and supplies, and emails containing daily assessments and updates – were also a key data source. Semi-structured interviews and informal conversations with NMCP staff, members of the campaign partnership, district health officials, volunteers, and LLIN beneficiaries provided input. Finally, direct observation based on visits to districts, sub districts, pre-positioning sites (PPS), villages, and individual households was an important source of data.

The field work included visits by the PI to seven of the 10 campaign districts: Akwapim South, Akyemansa, Birim Central, Birim North, Birim South, Kwahu West, and Upper Manya Krobo. Due to time constraints it was not possible to visit Akwapim North, East Akim, or Kwahu North. The assessment included 32 unstructured or semi-structured interviews, visits to 13 sub districts or PPS, and approximately 15 communities, about half rural and half urban. Visits to district health management teams (DHMTs), sub districts and PPS consisted of interviews with district directors of health services (DDHS), logistics, health information and disease control officers plus reviews of net storage facilities and inventory procedures. Community visits included meetings with community leaders (chiefs, village elders, queen mothers), observation of volunteers transporting and hanging nets, observation of households that had received campaign LLINs and conversations with LLIN recipients.

Interview topics included political support, logistics, supervisor and volunteer staffing, transport, hang-up, BCC and community mobilization, interaction between campaign outreach workers and LLIN recipients, financing, monitoring, and partner collaboration. Appendix A contains the complete field visit schedule including sites observed and interviews conducted. Appendix B contains a selected list of reports reviewed. Appendix C contains the monitoring instruments available for use by campaign supervisors.

4 Campaign planning

The campaign was scheduled for November 29 – December 10, 2010. Partners included NMCP/GHS, WHO, UNICEF, USAID/PMI, ProMPT/URC, JSI Deliver, NetsforLife, ADDRO, and the Red Cross.

Initial planning began in June and July 2010, immediately after conclusion of the Northern Region campaign. A baseline survey on net ownership and use and a pre-registration of households in the 10 districts took place in August and September. Based on the pre-registration, the 10 selected districts were allocated not quite 445,000 LLINs. Table 1 lists these allocations by district.

Table 1. Eastern Region LLIN campaign 2010: Net allocation by district based on pre-registration

District	LLINs Allocated
Akwapim North	43,350
Akwapim South	51,950
Akyemansa	37,700
Birim Central	51,300
Birim North	30,000
Birim South	39,850
East Akim	49,000
Kwahu North	67,900
Kwahu West	39,000
Upper Manya Krobo	34,650
Total	444,700

The initiative enjoyed strong support from regional authorities. The Regional Minister launched the campaign on November 23 in Kwamang, a community in Kwahu West District, accompanied by chiefs, religious leaders, district authorities, and campaign partners. The Regional Minister instructed district authorities to provide fuel and, where necessary, vehicles to move nets and supplies from the district level to sub districts, PPS, and communities.¹ The Regional Director of Health played an active role in coordinating the campaign. He chaired planning meetings and held district health directors accountable for their plans. Each district was to submit a micro-plan listing pre-positioning sites from which nets would be distributed to communities and outlining arrangements for logistics, volunteer recruitment, training, social mobilization, monitoring and supervision. Through the Regional Health Management Team (RHMT), the campaign provided districts with a template for micro-plans. However, as of November 30, ProMPT had received micro-plans from only 5 districts. In addition, some districts did not use the template and thus left out key information.

One crucial difference between the Eastern and the Northern Region campaigns was use of volunteers. In Northern Region, volunteers were paid a minimal stipend for their work distributing and hanging nets. Initially, Eastern Region volunteers were also to be compensated by the campaign. In September or October, however, it became clear that funds were insufficient. Partners decided to carry out the distribution using unpaid volunteers recruited and motivated only by their own communities. Supervisors

¹ JSI Deliver transported nets from Central Medical Stores in Tema to each district based on the pre-registration allocations. Each district was then responsible for moving the nets from district stores onward.

were to be selected by district health authorities. Where possible, the campaign encouraged districts to re-hire volunteers from the household pre-registration. Management was assumed by district and local authorities. Partners realized that relying upon district and local authorities and unpaid volunteers would likely make the campaign less cohesive. They hoped, however, that the model would encourage greater commitment at the district and local levels and would prove less costly and therefore more sustainable.

5 Implementation

5.1 Pre-registration and net allocation

Pre-registration went relatively smoothly and was completed on time. Nets were allocated based on pre-registration and only transported from central medical stores (CMS) to each district after pre-registration numbers were confirmed. As a result, districts received the correct number of nets to cover those pre-registered. Unlike in the Northern Region, there was no need to reallocate large numbers of nets from one district to another. Fewer partner coordinating meetings were needed, and this allowed representatives of the different partners to spend more time in the field. However, in some communities a large number of potential beneficiaries were missed by enumerators or did not pre-register. Some interviewees for this evaluation suggest that potential beneficiaries refused to pre-register because they were skeptical about the campaign's legitimacy. Also, in some households no one was at home when the enumerators passed by. Eligible individuals and households who had not pre-registered then complained during distribution when they did not receive a net.

Small adjustments might have significantly reduced under-registration. The campaign could have used BCC to bolster its legitimacy and encourage residents to be home for pre-registration. It might also have helped for each enumerator to carry a sample net during pre-registration to show beneficiaries what they would receive. When quantifying LLINs needed, campaigns in some other countries have allocated an additional 5 or 10% above pre-registration numbers to cover unregistered households encountered during distribution. That would work in a high pre-registration area but might have been insufficient given the high proportion of under-registered households in some districts of Eastern Region.

Another misunderstanding contributed to under-registration: The campaign instructed enumerators to subtract existing ITNs, both unopened and already hanging, from the total number needed by the household.² However, many enumerators could not accurately distinguish between an untreated, treated, and long-lasting net. Some also had difficulty determining if an existing net was sufficiently worn to warrant replacement. Finally, some enumerators also informed certain community members that they were not eligible to receive a new LLIN because their houses had window screens. During distribution, some potential beneficiaries then complained that they needed more nets than they had been allocated. This led some partners to recommend that future campaigns replace *all* hanging nets in a household and discount only those still sealed in plastic bags.

² Report on Eastern Region Long Lasting Insecticide Treated Net (LLIN) Distribution and Hang-up Training of Trainers Workshop, August 2010.

In this campaign, the partners decided to restrict distribution strictly to those pre-registered. This was probably appropriate given the under registration rate in some communities. It was also probably appropriate for keeping tighter control over net inventory. Volunteers were instructed to tell those unregistered that they would receive nets as part of a mop-up distribution to take place after the main campaign. However, volunteers had no means to record names or locations of unregistered individuals or households. Finding them later will require much more work than if the campaign had provided a mechanism for noting down unregistered individuals or households on the spot. For instance, had each volunteer team carried an empty registration book, the teams could have recorded names and locations immediately, thus avoiding one of the two additional field visits that will now be needed for any mop-up campaign: one to register and one to distribute the net.

5.2 Timeline & nets distributed

As noted earlier, LLIN distribution was scheduled for November 29 – December 10. However, because of delays in developing micro-plans, recruiting volunteers, and arranging transport of LLINs and supplies from the district level onward, the first district began distributing nets on December 1. By December 3, four of the 10 districts had begun. The final district did not begin until December 13. Akwapim North completed its distribution on December 29. Table 2 provides the projected and actual start and end dates by district.

Table 2. Eastern Region LLIN Campaign: Planned and actual start and end dates

District	Planned start date	Actual start date	Planned end date	Actual end date
Akwapim North	8 Dec	8 Dec	19 Dec	29 Dec
Akwapim South	6 Dec	13 Dec	19 Dec	14 Jan
Akyemansa	2 Dec	3 Dec	19 Dec	29 Dec
Birim Central	8 Dec	13 Dec	19 Dec	29 Dec
Birim North	2 Dec	2 Dec	19 Dec	29 Dec
Birim South	29 Nov	1 Dec	19 Dec	29 Dec
East Akim	1 Dec	3 Dec	19 Dec	29 Dec
Kwahu North	6 Dec	8 Dec	19 Dec	14 Jan
Kwahu West	6 Dec	7 Dec	22 Dec	29 Dec
Upper Manya Krobo	6 Dec	6 Dec	19 Dec	29 Dec

Table 3 contains numbers of nets allocated to each district as well as numbers and percentage of nets hung, unused nets accounted for, and unused nets not accounted for. These validated numbers were determined by reviewing net stock and inventory forms, counting empty bags returned by distribution volunteers and adjusting for variances in population between pre-registration and distribution. Where information was available, the numbers also take into account empty bags burned or discarded rather than returned to the PPS. Validated data for nets distributed and hung for most districts became available as of February 18. At the time of the validation exercise in February, however, Birim Central had not yet collected empty bags from its subdistricts. As a result, validated numbers are still not

available for this district. Validation in Birim Central is currently planned for the week of March 14. In four of the remaining nine districts, the discrepancy between nets distributed and empty bags counted is less than one half of one percent. In four other districts, the discrepancy is less than one percent. In Kwahu North, however, the estimated discrepancy of 0.62% includes an unconfirmed assumption of 10,021 hung in the Dwarf Island sub-district. Because of this district's remote location, validation team members were unable to revisit to count empty bags. The remaining district, Birim North, had a 6.9 percent discrepancy. The reason for this larger discrepancy is unclear and worth further investigation.

Table 3. Eastern Region LLIN Campaign: Net allocation distribution by district

District	LLINs sent to DHMT	LLINs hung	Difference	Unused LLINs counted	LLINs not accounted for	% LLINs hung	% LLINs not hung, but accounted for	% LLINs not accounted for
Akwapim North	43,350	42,196	1,154	964	190	97.3%	2.2%	0.44%
Akwapim South	51,950	50,446	1,504	1,255	249	97.1%	2.4%	0.48%
Akyemansa	37,546	28,004	9,542	9,252	290	74.6%	24.6%	0.77%
Birim Central *	52,800	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Birim North	30,000	27,894	2,106	30	2,076	93.0%	0.1%	6.92%
Birim South	39,850	39,802	48	29	19	99.9%	0.1%	0.05%
East Akim	49,000	48,753	247	3	244	99.5%	0.0%	0.50%
Kwahu North [†]	67,900	62,131	5,769	5,346	423	91.5%	7.9%	0.62%
Kwahu West	39,000	38,384	616	404	212	98.4%	1.0%	0.54%
Upper Manya Krobo	34,650	33,793	857	784	73	97.5%	2.3%	0.21%
Total	446,046	371,403	21,843	17,103	3,776	83.3%	3.8%	0.96%

* Note: There is insufficient information available from Birim Central to validate the total number of nets hung. Validation is supposed to occur during the week of March 14.

One key factor contributing to distribution delays was inadequate transportation to move LLINs and supplies from the district to the sub-district, PPS, and community levels. The next section, logistics and supply chain management, discusses transportation issues in more detail. Another important factor was having too few volunteers to distribute and hang the required number of nets. The campaign faced several challenges with volunteers, discussed below in the section on human resources. Most relevant to distribution, however, is the number of person-hours required to distribute the nets allocated to any given community. Each village was responsible for determining the number of volunteers needed. The campaign provided minimal guidance.

Some partner representatives interviewed for this evaluation estimated that a team of two volunteers could hang about 40 nets per day. The basis for this estimate is not clear, but it was not a product of systematic testing. In early field visits, we observed one team of two volunteers hang each net in about 10 minutes. At that rate, it would take 400 minutes (6 hours and 40 minutes) to hang 40 nets. But this accounts only for the actual hanging of the net. It does not include time for moving between households, negotiating access, or delivering key BCC messages. Had volunteers needed to convince a potential recipient to grant access, hanging a net could have taken double or triple the observed time.

We also know little about how many hours, on average, a team of volunteers worked in a day. In several villages we visited, volunteers or supervisors explained that they could only distribute nets for a few hours in the morning and a few hours in the evening; during most of the day, village residents – particularly male heads of household – were cultivating their fields. Another indication that 40 nets per day may be overly optimistic is the report from the August training of trainers workshop noting that pre-registration volunteers were only expected to register 30 households per day. Presumably, hanging a net would take at least as long as registering a household.

Future campaigns could benefit from a more explicit calculation of volunteer hours needed. A day or two of observing volunteers distributing nets – perhaps as part of a mop-up effort in the first 10 districts of Eastern Region – might provide the basis for a more accurate estimate of person-hours needed to hang a given number of nets. Time needed will vary depending on terrain, distance between houses, and other factors, but an evidence-based estimate would be extremely useful for planning future campaigns.

Success Story – Door to door LLIN Campaign opens door for the delivery of other health interventions.

Kwame Addo is a prayer camp in the Bosovilla community of Akyemansa district notorious for rejecting health interventions brought to their doorstep by community health workers. Kwame Addo residents declined to pre-register for the LLIN campaign. During the hang up exercise, however, community members were enthusiastic to receive free nets. Health workers therefore used this opportunity to hang 14 nets and educate these unregistered community members on malaria and other health issues. According to the sub-district supervisor for the campaign, Bosovilla prayer camp members have now agreed to open their doors to community health workers and receive health interventions. The District Director of Health, Ms. Isabella Rhule, was excited to hear of this development and was happy that **“the door-to-door hang up campaign has opened an otherwise bolted door”** that will help her health workers reach community members of Kwame Addo. She plans to follow up immediately with all needed interventions including antenatal care, immunizations, and general health care. She hopes that prayer camp leaders will keep their word and receive health workers when they visit.

– Ato Selby, John Awumbila, Otubea Mante

5.3 Logistics and supply chain management

Individuals interviewed for this evaluation reported that net transport from CMS to Eastern Region and the 10 participating districts, handled by JSI Deliver, went smoothly. Districts received their allotment of LLINs by early to mid-November. Transportation from the district level onward was more challenging. The Regional Minister requested District and Municipal Chief Executives to cover fuel costs out of district assembly budgets. Some districts provided this support quickly, others slowly or not at all. One reason for the delays suggested by some interviewees was that district assembly terms of office had ended before the LLIN campaign began, and new elections, originally scheduled for October, were postponed. A date for the rescheduled elections had not been set by early December. As a result, at least in some districts, the district government had no mechanism through which to allocate funds.

Some districts also lacked access to functioning vehicles. In Kwahu North and Birim Central, campaign field teams had to help move nets to sub districts and pre-positioning sites when it became clear that no other transport was available. Upper Manya Krobo received its allocation of LLINs during the first week of November. Due to lack of funds for transportation, however, the district did not distribute nets to the sub districts and PPS until December 3. Some districts were also reluctant to move nets to pre-positioning sites until just before distribution began because of concerns that storage at these sites would be less secure.

Most ancillary supplies (hammers, nails, flashlights, and markers) arrived on time and in sufficient quantities. Two exceptions were rope and inventory forms. Rope for the nets was packaged in bundles with 12 coils of rope per bundle. The quantity of rope needed by each district was calculated in numbers of bundles. Due to some confusion, the regional medical stores (RMS) depot sent some districts individual coils of rope rather than the equivalent number of bundles. As a result these districts received 1/12th the quantity of rope needed and had to send or travel to Koforidua to obtain more. At least one DDHS complained that the campaign had not provided her with a spreadsheet listing the items and quantities she was supposed to receive. Had she received such a sheet, she said, she would have been able to correct the error before ropes were shipped from RMS.

Central level campaign coordinators distributed a small number of inventory and monitoring forms to each district. Districts were instructed to photocopy a sufficient number to supply their sub districts and PPS. However some districts lacked access to photocopying facilities or distributed their originals before making copies. Campaign coordinators then had to photocopy additional forms and supply them to these districts. Some locations also faced shortages of the stickers designed to be affixed to every house receiving a net. Campaign coordinators had to distribute more of these stickers as well.

Observation suggests that most sites visited at all levels maintained adequate security for LLIN storage. In most cases, LLINs were stored in a locked room. Where locked storage was not available, sites took other precautions. The campaign developed redundant inventory cards and forms to track nets as they moved from the district to the houses in which they were to be hung. Prepositioning sites kept check-out and check-in lists: volunteers distributing nets would pick up and sign for a certain quantity at the beginning of a shift, then return empty bags and unused nets at the end. It was not possible to inspect a random sample of PPS sites as part of this evaluation, but most sites we visited were able to account for every net they had received. Nevertheless, the quality of supply chain management training varied at the sub-district and PPS level, so we also visited some sites where health workers did not have adequate training or lacked the necessary forms to track inventory.

LLIN tracking at the household level was also somewhat inconsistent due to different understandings about the use and placement of inventory stickers on households receiving nets. The campaign instructed supervisors to instruct volunteers to place a sticker outside every *household* that received one or more LLINs and to record the number of LLINs each household had received. Net recipients were then supposed to sign or make a thumbprint in the pre-registration book attesting to the number of nets they had received. There was considerable confusion among volunteers and supervisors about this

process. Some volunteers affixed one sticker per *compound* rather than one sticker per *household*, even in compounds where multiple households received multiple nets.

Despite attempts to correct this, we observed supervisors throughout the time of the field visit instructing volunteers to use one sticker per compound. After affixing the sticker, some volunteers left it blank rather than recording the number of nets hung in the household. Others had net recipients make a thumbprint on the sticker rather than in the pre-registration book. In these cases, there was no record of confirmation by household members that they had received nets or the number of nets received. The impact of this confusion on net leakage was probably minimal and the cost of ensuring a more meticulous process may not be worth the savings that could be achieved. But without records, it is impossible to quantify.

5.4 Human resources

The campaign's human resource plan called for partners and health officials to move nets and supplies from the central to the district level, for district and sub-district health workers to move them from the district to the village level, then for village

supervisors and volunteers to distribute and hang the nets in their communities. Field supervisors were to have been recruited from among the prior volunteers who had participated in the baseline survey or in pre-registration. These participants were literate, familiar with the campaign's objectives and planned activities, and had previous experience with the communities that were to receive LLINs. The campaign would then recruit volunteers and pay them a small stipend similar to the approach used in Northern Region in June 2010.

About two months before the scheduled distribution launch date, however, it became apparent that the campaign lacked funds to pay volunteer stipends. Campaign partners then decided on distributing and hanging LLINs using volunteers compensated by their own communities rather than the campaign. Inability to pay made it impossible for the campaign to attract volunteers directly. Instead, each village would have to recruit its own volunteers. The need to rely on villages to recruit their own volunteers required decentralization of the campaign further up the supply chain: since district health officials had to work with sub-district, health facility, and community leaders to arrange recruitment, national level campaign partners were dependent upon district officials to manage downstream activities to the community level.



Figure 1. A volunteer helps a net recipient make a thumb-print on an LLIN campaign sticker in Eastern Region. The thumb-print should have been made in the pre-registration book.

The campaign budget was also insufficient to provide t-shirts or caps for volunteers. When this became clear in September, the campaign submitted a proposal to Rotary Club of Accra requesting assistance. Rotary Club expressed interest in providing t-shirts, but the Rotary Club board was not able to meet prior to the campaign so the volunteers did not receive t-shirts.

One task assumed by the districts was selection of field supervisors. The budget was still sufficient to provide supervisor stipends, which made the supervisory positions highly attractive. Most districts assigned the majority of these positions to professional health workers. The results were not always ideal. Many health worker/supervisors were very conscientious, kept careful track of inventory, and went to significant lengths to support their community volunteers. Others were either less able or less willing to leave their health facility to spend time in the field. This left many volunteers without adequate support.

Table 4. Training of district health officials as reported by national partners³

Date	District	No. trained
October 5, 2010	Akwapim North.....	9
	Akwapim South.....	8
	Upper Manya Krobo.....	7
	East Akim	8
	Kwahu West.....	8
October 6, 2010	Birim South	6
	Birim North	7
	Birim Central.....	8
	Akyemansa.....	6
October 8, 2010	Kwahu North.....	8
Total		75

As shown in Table 4, national partners trained regional and district officials for the hang-up in early October. A total of 75 representatives participated from the 10 districts. Each district then scheduled its own training of supervisors. Most of these took place between the last week of November and the first week of December. Supervisors did not provide any formal training for volunteers. Instead, they conducted a demonstration of how to hang an LLIN for volunteers at the start of the campaign in each community. This happened somewhat ad hoc since communities recruited volunteers at different times.

At one district training, the supervisors pilot-tested LLIN hang-up in a residential compound opposite the training venue. In another, training was purely didactic with no hands-on component. Both included 50-75 participants. Monitoring visits to net storage sites revealed that some sub-district and PPS level health workers did not fully understand the inventory control procedures. This could be a result of training sessions in which there was limited opportunity to confirm that participants understood the key issues on which they were being trained.

The absence of formal volunteer training resulted in considerable community-to-community variation in what volunteers did and what messages they communicated to net recipients. Volunteers in different sites

³ Source: "Report on the ER LLIN Logistics Training – October 05 – 08, 2010."

seemed to have different understandings of the distribution procedures. As already mentioned, there was confusion about how and where to use stickers, not all volunteers provided the same BCC messages (see BCC below), and volunteers reported different understandings about how to manage unanticipated situations (for example, being approached by individuals who had not pre-registered but wanted a net).

Volunteer recruitment was a challenge almost everywhere. Local health officials and many community leaders knew that volunteers in Northern Region had been paid and wanted equivalent compensation. Frustration among community leaders and volunteers was exacerbated by the fact that the original campaign plan called for paid volunteers. Some people interviewed for this evaluation suggested that the harvest and the proximity of Christmas made people less willing to work without pay. However, regional and some district officials supported the idea of using volunteers recruited and motivated by the community, and they advocated for it at lower levels. In the words of one public health nurse:

The most important thing is to make people understand the value of what they are receiving – they are getting free nets, transport to the PPS, supplies, and the technical assistance needed to hang them. We should tell them, ‘if you can’t [at least] hang the net yourself, we’ll send them elsewhere.’ One community, upon receiving this message came back a few days later and said, ‘We’ve gone and we’ve thought about it and decided it would be a loss to us if you take the nets away, so we’ve brought a list of volunteers.’

- Theresa Dakurah, DDNS/PH, Kwahu West Municipal Health District

Communities successful at recruiting volunteers generally offered some locally organized incentive in lieu of money: Queen mothers in some communities prepared food; one district assembly representative purchased bottled water; another joined volunteers going house-to-house and helping hang nets in her district. In several communities, chiefs or other local leaders decreed that all LLIN recipients would have to pay a small fee, usually 50 pesewas or one cedi, to compensate volunteers. The NMCP and all other campaign partners were unified and consistent in prohibiting this practice since the distribution was meant to include all households, and requiring payment of even a small sum might have been a barrier for some. The campaign did allow community leaders to raise funds through voluntary contributions, and some communities used this approach to provide support for volunteers. Some communities achieved good results holding durbars to recruit volunteers.

In one instance, an NGO unaffiliated with the campaign was distributing free ITNs and paying their volunteers 20 cedis per community plus providing food, caps, and t-shirts. Not surprisingly, this generated resentment among campaign volunteers. The NMCP Coordinator directed that the DHMT ask the Regional Director of Health Services and the Regional Minister to intervene with local government officials and request that the NGO coordinate with and not undercut the regional campaign.⁴

In the end, most partners seemed to conclude that volunteers were justified in expecting some sort of compensation even if not from the campaign. In the words of one interviewee:

The hang up exercise comes at no cost to partners but volunteers should be motivated in one way or the other by the community. Volunteers are not meant to do the work free of charge and the communities must plan for that before volunteers start working.

⁴ Email from NMCP Coordinator Dr. Constance Bart-Plange, 8 December 2010.

The notion of doing all this work for free is not sitting well with most volunteers and very few are willing to work for free. Where communities are taking care of their volunteers or have promised them incentives, work is progressing as it should.

Another informant stressed the importance of public acknowledgement as a motivator. Health workers and community leaders should make sure to recognize volunteers whenever an important person visits from outside: “bring the visitor by to meet them and shake their hand,” keep highlighting the importance of the volunteer’s contribution to the campaign.

Thus using volunteers not paid directly by the campaign may be feasible and more sustainable than a large cash outlay by donors or the health system. Future campaigns should help communities identify options for local compensation including some combination of monetary, in-kind (e.g., food, t-shirts, caps), or social (public recognition) incentives. It might be worth testing different combinations of incentives to identify an optimum package.

The campaign did not offer guidance on the number of volunteers needed to carry out the distribution and hang-up. Such guidance would be helpful. As noted in the timeline and nets distributed section above, estimates of how many nets that could be distributed and hung by a team of two volunteers in one day were overly optimistic. In some communities, volunteers were asked to hang several hundred nets and balked at the number of days this would keep them away from income-generating activities. In others, volunteers began enthusiastically but tired when they realized how long it would take to complete the task. For future campaigns, partners should use field experience to determine the number of nets that a team of two can hang in one day, including the average time required to walk between households or compounds. This will vary considerably with settlement density in different areas. The campaign should then advise communities how many volunteers will be needed to finish distribution within 2-3 days. Recruiting a large number of volunteers for a short period of time and asking each volunteer to commit to hanging fixed number of nets (e.g., 50 or 100) may be more effective than recruiting a small number of volunteers and asking each to hang hundreds of nets over a week or more.

5.5 BCC and community mobilization

Behavior change communication for the campaign was scheduled to begin with production of print material and development of radio announcements and van skits during July and early August. Advocacy training with opinion leaders and training of journalists was to occur in October. Community drama performances were also to begin in October and continue during and after the campaign. In addition, more radio and mobile van announcements were to take place just before hang-up, during the second and third week of November.

Finally, field supervisors were to accompany volunteers and transmit three key messages to net recipients: (1) wait 24 hours before using the net; (2) wash it only with mild soap (e.g., “key” soap), not detergent; and (3) after 24 hours, sleep under the net every day, even when there are few or no mosquitoes. During distribution, supervisors would use the pre-registration list to assign teams to each household or compound. Volunteers were to take LLINs to each household, hang them, then return to the supervisor who would assign them a new household. At day’s end, the supervisor would revisit each

household, confirm that the volunteers had delivered and hung the correct number of nets, and explain the messages to each family.

Table 5 lists scheduled mass and mezzo-media BCC activities and outcomes. The paragraphs below discuss delivery of the interpersonal messages.

Table 5: Mass and mezzo-media BCC activities scheduled and carried out

Activity	Date scheduled	Outcome
Printing of BCC & IEC materials	Jul 1 – Aug 15	Completed as scheduled & distributed by NMCP to health facilities
Development of radio and van skits & announcements	Jul 1 – Aug 15	Completed mobile van and radio announcements for hang-up campaign. No announcements for pre-registration, no skits for either.
Radio discussions & mobile van announcements / (Hang up campaign)	Nov 8 – 19	Carried out Nov 25 – Dec 5
Advocacy training with opinion leaders	October	Carried out Nov 9 – 11; one day in each of 3 zones ^a
Training of journalists and stringers	1 st week Oct	October 15; attended by 30 journalists representing 25 media houses
Road show	Oct 24 – Nov 5	Cancelled due to lack of funding
Community drama performances	Oct 2010 – Mar 2011	Drama performances did not take place and are not planned for the first 10 districts; will take place in remaining 11 districts.

^a Zone 1 (Oda zone) Akyemansa, Brim Central, Brim North and Brim South; Zone 2 (Kibi Zone): East Akim, Akwapim North, Akwapim South, Kwahu West and Upper Manya Krobo; Zone 3: Afram plains, Kwahu North

The plan for delivery of BCC messages to new net recipients had to be adapted because of the changes in the approach to recruiting supervisors and volunteers discussed earlier. Having supervisors assign volunteers household by household was not feasible; in many cases supervisors were not in the field throughout the distribution. Instead, in most villages I observed, volunteers took the pre-registration book and one or two bales of LLINs and carried them house to house.

The volunteers thus became responsible for delivering the three key messages on net use. Typically they did this at each household. Some volunteers we observed mentioned all three issues, some only one or two. However, in the households I observed and based on reports from other monitoring teams, recipients' attention was often divided. While volunteers were talking, recipients were cooking, taking care of children, working, or conversing with neighbors. Since volunteers were delivering the messages one family at a time, residents of other households in the same compound were often walking about, talking with others, or interrupting the conversation between volunteer and recipient. The impact on recall was evident: When we asked recipients what volunteers had told them about net use and care, most remembered the first message (don't use for 24 hours), and some remembered the second (wash only with mild soap), but few remembered the third and arguably most important: use the net every night even when mosquitoes seem absent.

Recipients also expressed safety concerns: if they were not supposed to sleep in the net for 24 hours, how could they know the insecticide would be safe after that time? During one visit, we observed LLINs hanging on a clothesline outside a house that had received nets the previous day. The female head of

household explained that the volunteers had hung the nets inside, but that she had taken them down almost immediately. At first she was reluctant to explain why. After we spoke with her for a few minutes, she told us that the volunteer's instructions to avoid sleeping in the net for 24 hours frightened her, and she worried that the insecticide would harm her family. In several villages we observed volunteers wearing gloves and surgical masks while hanging nets. This probably makes sense to protect against skin and throat irritation for someone who is handling many new nets per day, but might also raise or heighten recipients concerns about LLIN safety.

Better coordination of message content and delivery with the different stages of the campaign could minimize these problems in the future. Specific suggestions to consider include:

- Use this campaign's experience to better focus messages during pre-registration on the importance of pre-registration rather than the importance of net use. BCC messages should respond to potential public skepticism about whether the campaign is legitimate. They should reinforce the point that pre-registration now is necessary to receive a net later. Having sample nets to show at durbars prior to and during pre-registration should help reinforce the campaign's legitimacy.
- Prior to net distribution, use BCC to recruit volunteers & explain hang-up. As part of recruitment BCC, explain the number of volunteers needed in the following terms: more volunteers = fewer nets per volunteer = faster distribution = less disruption for volunteers and beneficiaries.
- During distribution, train volunteers to deliver BCC messages to the entire compound at once rather than household by household. This will help volunteers use time more efficiently. It should also help reduce distractions by delivering messages in a structured manner rather than ad-hoc.
- Train volunteers to ask net recipients to repeat each message back to confirm that they have understood it correctly. Discuss and correct any misunderstandings.
- Encourage net recipients to ask questions and express any concerns they may have about net safety. Create an opening for this discussion by acknowledging that people may have legitimate concerns rather than dismissing such concerns as trivial or incorrect.
- Insure that volunteers can respond to typical questions accurately. Prepare a list of frequently asked questions and answers for volunteers to use.
- If the previous guidelines are beyond what can reasonably be expected of volunteers, consider a different approach. For instance, schedule a post-distribution durbar where a health worker can deliver key messages, elicit questions, and discuss concerns that might otherwise inhibit net use.

5.6 Supervision of health workers and monitoring of distribution

The campaign used four levels of supervision: sub-district, district, regional, and national. Each sub-district was to have five supervisors visiting communities continuously throughout the distribution, initially planned for seven days. Transportation at sub-district level is limited, so district vehicles were supposed to enhance mobility, especially to isolated communities. Each district was to have three district-level supervisors. Between them, these supervisors were to visit each sub-district twice. Within each sub-district, each supervisor was to visit at least two communities. In each community, district-level supervisors were to observe volunteers hanging a net in at least one household and then, without the volunteers present, interview the residents of a second household which had already received nets.

The purpose of the sub-district visit was to check inventory control practices and progress on distribution. The purpose of the community visit was to observe if volunteers were hanging the nets correctly, observe what messages volunteers were giving net recipients about use (the three key messages mentioned earlier), and check whether household members were satisfied with the work of the volunteers and had heard, understood, and retained the three key messages. The region was to provide two supervisors per district (10 total). Each regional supervisor or team was to visit the DHMT in their assigned district at least once, each sub-district at least once, at least one PPS for each sub-district, and at least one community per sub-district. Objectives were the same as described above.

There were 13 national level teams: one for each district plus a second for Kwahu North (because of its size and remoteness). The two additional teams were each assigned to one of two zones. Each zone contained five districts. National teams included representatives of all the partner organizations. The structure of supervisory visits by the national teams was to be the same as that for the regional teams: (1) a visit to the DHMT, (2) a visit to each sub-district, (3) a visit to at least one PPS per sub-district, and (4) a visit to at least one community per PPS. The campaign developed three monitoring forms to guide supervisory visits: form A, a checklist for community level supervision; form B, checklist for district level supervision; and form C, checklist for pre-positioning site supervision. All three forms are attached to this report as Appendix C.

During the field visit, I was able to travel with and observe five of the national supervisory teams. These included representatives of the NMCP, ProMPT, NetsforLife, and JSI Deliver. I interviewed members of two teams during distribution and traveled with members of a third from December 1-3, before districts began distributing nets. I was not able to observe the district or regional teams. The national teams employed different supervisory styles: Some were more supportive, working with district, sub-district, and PPS staff to identify problems and figure out solutions. Others took a more directive approach, reviewing documents, pointing out problems, and instructing supervisees to correct these problems without inquiring about context or permitting input.

There were also varied approaches to the use of monitoring forms. Some used them systematically, completing each checklist line by line and answering every question. Others used the list as an informal guide for reviewing operations and taking notes. Others did not refer to the forms at all and carried out unstructured visits. For supervision, any of these approaches was probably adequate. The forms were quite detailed. Completing them during each visit would have been time-consuming and somewhat cumbersome, especially in instances that required a health worker to produce and review records. Had the forms been used systematically, however, they would have produced useful data to inform future campaigns.

Whether the value of that data would have been worth the extra time required is something campaign partners should consider for the future. Increasing the rigor of monitoring would give the NMCP and partners much more specific information about inventory, security, effectiveness of volunteer-provided BCC and other issues. This could be helpful in improving future campaigns. But collecting, entering and analyzing the data would require additional time and money. Monitoring teams would need to collect data systematically. To ensure validity, the campaign should select sites randomly. This is likely to

increase travel time considerably since selected sites may be quite distant from one another. Using a non-random (convenience) sampling approach to select sites will likely bias the sample heavily towards health facilities and communities that are easy to reach.

Another challenge for national teams was finding sites and moving between them. Drivers and staff were usually familiar with locations of each district's DHMT, but not necessarily with sub-districts, pre-positioning sites, or communities. Often but not always, teams could arrange for a local health worker familiar with the terrain to accompany them. In cases where teams went unaccompanied, moving from one site to another often consumed large amounts of time. To some extent, this was inevitable: distances between sites are vast and roads often poor. But some delays occurred because drivers or supervisors got lost and spent considerable time driving in the wrong direction. These delays could be avoided in the future with better planning. This should include arranging for a local escort ahead of time rather than hoping to find someone available upon arrival at a DHMT or other staging site. Developing a schedule of site visits in advance would make this coordination possible. The tradeoff would be decreased flexibility to respond rapidly to unexpected problems in sites not on the schedule. One solution, in cases where there are multiple levels of supervisory teams (e.g., national, regional, district) would be to designate certain teams to carry out monitoring according to a pre-defined random schedule and others to serve as rapid-response problem solvers.

6 Conclusions and Recommendations

Overall, the campaign had several strengths. Political support for and commitment to the campaign at the regional level was excellent, both within and outside the health sector. Such support was also good in some districts, though not all. Many DDHS and other DHMT staff members (disease control officer, supplies officer, etc.) exerted great effort to develop and carry out the campaign and found creative solutions to problems along the way. Some DDHS, sub-district leaders, and in-charges at PPS spent their own money when necessary supplies did not arrive on time or arrived in smaller quantities than needed. Village leaders (chiefs, opinion leaders, queen mothers) and volunteers identified local resources to support distribution and hang-up. For every situation in which leadership was lacking, there were others in which participants found ways to resolve problems so that the campaign could continue successfully.

The logistics system worked well from the central to the regional and from the regional to the district level: for the most part, LLINs arrived on time and in the correct quantities. There were some problems with allocations of rope and inventory forms, but these were resolved quickly. The management structure for the campaign worked effectively: teams from among the different partners received and carried out assignments, campaign leadership was able to identify and resolve problems within their control quickly and with minimal disruption. Moving nets from the regional to the district level only after preregistration obviated the need for daily "war room" meetings of the kind that took place in Northern Region. This freed up time and made it possible for partner teams and campaign leaders and managers to spend most of their time in the field. Partners communicated among themselves relatively effectively using mobile networks (both voice and text), and email. However, there were some problems beyond the control of campaign leadership, principally volunteer recruitment. This report makes several recommendations to improve volunteer recruitment in the future. Security and inventory control were

also strong points at sites observed during this evaluation. Participants from the district to the PPS level arranged appropriate storage and kept careful track of net inflow and outflow. As instructed, volunteers collected and returned empty bags from every net hung. Also as instructed, volunteers either hung all the LLINs they distributed or insisted that recipients hang their LLINs with the volunteer present and return the empty bag. In the few cases where potential recipients refused to allow a volunteer access to the household and also refused to hang the net themselves, the volunteers returned the net to the PPS where it was reintegrated into the inventory.

In addition to its strengths, the campaign also faced a number of challenges. The next section summarizes these challenges and offers recommendations about how to avoid or overcome them in future campaigns. For ease of reading, the challenges and recommendations appear in tabular format.

6.1 Pre-registration and net allocation

Issue/concern	Possible solutions
A significant percentage of the population refuses to pre-register because of doubts about whether the campaign is legitimate.	<ul style="list-style-type: none"> - Utilize mass media messages and/or social mobilization (use of sound trucks, static sound systems, durbars) prior to pre-registration to build credibility and inform the population in advance. - Include the following messages in BCC at this stage: <ul style="list-style-type: none"> • The NMCP will be distributing nets • You must pre-register to receive a net • Volunteers will be registering people in this community on ____ [date]. If you cannot be home to be pre-registered on that date, come to _____ [location] to register. - Show sample LLINs at community durbars so that target recipients will see the net they are to receive. - Provide pre-registration enumerators with sample LLINs they can show potential beneficiaries during preregistration.
Individuals/households not pre-registered want nets once distribution begins. Volunteers are told to inform non pre-registered households that they will receive nets during a mop-up campaign, but there is no systematic way to keep track of which households need nets or how many they need.	<ul style="list-style-type: none"> - Add 10% buffer to initial LLIN allocation to account for non-registered households - During distribution, provide a systematic method to register households not previously registered (e.g., volunteer carries blank pre-registration book; supervisor checks new registrants against existing pre-registration lists to prevent “double-dipping,” or volunteer refers unregistered households to the PPS to be checked against pre-registration records).

6.2 Logistics and supply chain management

Issue/concern	Possible solutions
Districts receive incorrect quantities of some supplies (e.g., rope, inventory forms, stickers)	<ul style="list-style-type: none"> - Provide DHMTs with spreadsheets containing allocations of all supplies at least one week prior to scheduled start of distribution.
District assemblies fail to provide needed funds and/or vehicles to move LLINs and supplies from district to sub-districts and PPS.	<ul style="list-style-type: none"> - Work more closely with regional authorities (e.g., Regional Minister) to secure cooperation and collaboration from district assemblies and district/municipal chief executives - Arrange for support from other sectors with greater access to vehicles and equipment (e.g., military, agricultural sector). - Time the campaign to take place while district assemblies are in session and able to authorize expenditures. - Arrange alternative transportation plan in case projected support does not materialize. E.g., line up commitments from local businesses, NGOs or FBOs to donate fuel or to transport supplies in company-owned vehicles.
Campaign supporters and participants face competing priorities (e.g., GHS monthly reports were due during the first week of the campaign.)	<ul style="list-style-type: none"> - Make every effort to avoid scheduling conflicts though some will inevitably arise. As much as possible, develop alternative plans to use in case of a major scheduling conflict. - Where possible, postpone routine activities (e.g., monthly reporting) during the campaign
Volunteers received conflicting information about how to affix and use net distribution stickers on households	<ul style="list-style-type: none"> - Standardize information and ensure supervisory teams at all levels are aware of the standard operating procedures.

Some of those interviewed for this evaluation stated that the rope and nails procured for the campaign were much more costly than necessary. A JSI Deliver market survey conducted in Accra prior to procurement identified adequate cotton rope for about half the price of the nylon rope eventually used. A February 2011 survey had similar results. For the next campaign, partners should consider the feasibility of using this less costly alternative. Using no rope at all may also be an option. Discussion is underway with LLIN manufacturers to extend the netting material from the corners of each net to use in place of rope. Manufacturers may be willing to do this at no additional charge. This would significantly reduce costs and simplify logistics. One campaign leadership team member reported that he hung LLINs this way in his children's bedrooms. He said the extra netting fabric was quite durable and had withstood vigorous pulling by his children.

There is also some discussion underway with manufacturers to prepackage nets with metal hooks that could be used in place of nails. Manufacturers may agree to include hooks at no additional cost per net. However campaign partners should think carefully about the feasibility of this approach: the hooks would work in houses with wooden walls and perhaps with some mud walls, but would not work in cement. Depending on the proportion of houses of cement construction, half or more of the hooks would be discarded and go to waste. The campaign would have to buy cement nails for these houses.

6.3 Human Resources

Use of volunteers not compensated by the campaign may be more sustainable at scale, but it leaves the campaign with less control over operations at the community level. This tradeoff is probably worthwhile if the campaign allows enough time for volunteer recruitment and provides sufficient guidance to communities about how to motivate volunteers successfully.

Issue/concern	Possible solutions
The Eastern Region pioneered the use of community volunteers not compensated by the campaign. This is a promising approach, but it was difficult to recruit volunteers without offering any compensation.	<ul style="list-style-type: none"> - Allow sufficient lead time for volunteer recruitment. Support from chiefs, queen mothers, and other opinion leaders is essential. Allow time to obtain this support. - Ensure that communities understand that they are responsible for compensating volunteers and that the volunteers are not expected to work entirely “free.” Provide communities with specific ideas about the type of compensation they could offer (e.g., food, water, clothing) in addition to or instead of cash. - In some districts, health officials explained volunteer-recruitment as an in-kind contribution on the part of the community. Messages like “we’re bringing you the nets for free, the least you can do is help with hang-up,” seemed effective. - Use BCC and community mobilization as recruitment tools. Community durbars shortly before distribution begins could help encourage community members to volunteer. - Consider recruitment from within existing community-based organizations. Churches, mosques and NGOs can promote volunteerism, identify volunteers from among their members, and provide motivation for these volunteers. - Donors may be reluctant to provide t-shirts or caps to motivate volunteers, but many campaigns have found them to be an effective incentive. They serve to legitimize the volunteers in the eyes of the community and make them feel recognized for their efforts during and after the campaign.

Issue/concern	Possible solutions
Some communities recruited too few volunteers for the volume of nets to be distributed. Volunteers became discouraged when faced with an overwhelming workload and dropped out before all nets were hung.	<ul style="list-style-type: none"> - Observe pilot volunteers for 1-2 days to accurately determine the average amount of time needed to hang a net. Or extrapolate from previous distribution campaigns in zones with similar conditions. - Use this information to advise communities on how many volunteers they will need to recruit. - Limit the amount each volunteer is asked to do. Recruit more volunteers and ask each volunteer to do a smaller amount of work. - Use BCC and community mobilization to convince a large number of people to volunteer for a short time rather than recruiting a few volunteers for a longer time. Ensure that potential volunteers know what they are being asked to do.
Field supervisors were compensated, so many districts awarded supervisory positions to health workers rather than experienced community volunteers. Then the health workers were unable to spend sufficient time outside their facilities to provide adequate supervision	<ul style="list-style-type: none"> - Ensure that supervisory positions go to individuals who are able to spend adequate time with volunteers in the field, not to facility-based health workers who must spend most of their time within their own facilities.
Some volunteers said they did not recognize people who registered under their “Christian” names because they know them only by their traditional names	<ul style="list-style-type: none"> - Consider using traditional as well as “Christian” names in pre-registration lists.

6.4 BCC and community mobilization

Issue/concern	Potential solutions
BCC focused mainly on why using an LLIN is important and how to use one correctly. Meanwhile many potential recipients were unaware of when certain campaign activities were happening and what was involved or expected of them.	<ul style="list-style-type: none"> - Organize BCC / Community mobilization to spread the word about different stages of the campaign – not just about LLIN use. - Carry out community mobilization to build support for activities such as pre-registration, not just during actual distribution. - See recommendations for BCC and community mobilization in sections on pre-registration and net allocation, human resources.

Issue/concern	Potential solutions
<p>Many net recipients do not remember key messages about net use and care. Many were observed not listening closely when volunteers attempted to communicate the three key messages.</p>	<ul style="list-style-type: none"> - Rather than repeating the same message for every household within a compound, the volunteer could gather all compound residents in the courtyard once net hanging in the compound is complete. This will save volunteers from having to repeat the messages multiple times in the same compound. It may also result in recipients paying better attention since this represents a more structured gathering rather than some informal words after hanging a net. - Ask net recipients to repeat back what they have heard and understood. Provide additional information as necessary.
<p>In some households visited the day after distribution, net recipients had taken down their nets and hung them outside. When questioned, they mentioned that when volunteers told them to wait 24 hours before using the net, they became afraid the insecticide might harm them or their children and decided to remove the net from the house. (Volunteers wearing face-masks and gloves may have contributed to this concern in some communities.)</p>	<ul style="list-style-type: none"> - Explain clearly what adverse effects may occur as a result of contact with the insecticide when the net is new (e.g., burning or itching eyes, skin irritation, rash), so that net users are not surprised if they experience such effects. - Explain to net recipients that adverse effects are temporary and will not harm their health in the long-term. Explain that any effects they experience will disappear after 1-2 days. Explain that after 1-2 days, the insecticide will no longer cause any adverse effects. - If net volunteers are using gloves and masks, explain to net recipients that because volunteers handle many nets per day, they are exposed to much a higher quantity of insecticide than a net user. Reinforce that the net is safe for users.
<p>Net users report that nets are hot and uncomfortable to sleep in.</p>	<ul style="list-style-type: none"> - Net users may be more likely to respond positively to BCC if that communication validates rather than negates their experience (“Yes, nets <i>are</i> sometimes hot and uncomfortable to sleep in, but it’s worth putting up with the discomfort because...”) - Many houses have very poor indoor airflow. Improving airflow by rearranging furniture or storage could make net use more comfortable. This might encourage net owners to use nets more regularly.

6.5 Net use and care

Issue/concern

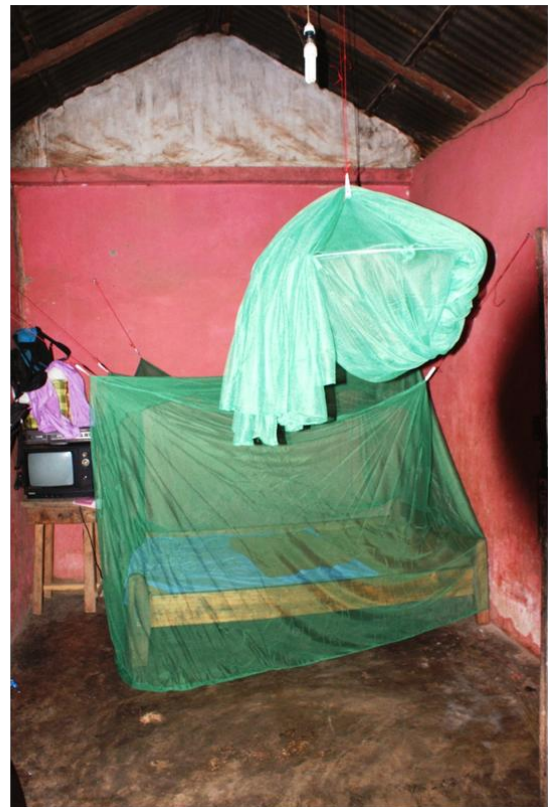
Volunteers, health workers, and campaign participants give conflicting information about exposure to sun. Some say it is OK to hang or dry the net in direct sunlight; others say it is not, that the insecticide is photosensitive.

Potential solutions

- Current generations of pyrethroid insecticides are not significantly photosensitive – their potency is not significantly reduced by exposure to strong sunlight.
- Ensure that campaign representatives at all levels have correct information on this issue and provide a consistent message to net users.



Figure 2: In this one room house, two family members sleep on a bed and two on the floor. Hanging rectangular nets over both sleeping spaces takes up almost all floor space. Replacing one of the rectangular nets with a conical net makes most of that space available again when the net is not in use.



Rectangular nets occupy a lot of space (See figure 2). Users may take them down because they need to use the space occupied by a net during the day.

- Hang nets so that they are easy to take down and put back up. This minimizes inconvenience to net users and may make it more likely that they will re-hang the net if they have taken it down.
- Hang nets in such a way that users can slide them up against a wall like a drape during the day to free up space. Users may be more likely to open the net nightly if they do not have to re-hang it.
- Make some conical nets available where nets are to be used in cramped spaces. Because they are hung from a single point rather than four corners, conical nets are easier than rectangular nets to move out of the way when not in use (See figure 2).

6.6 Supervision of health workers and monitoring of distribution

Issue/concern	Possible solutions
Many communities experience difficulty recruiting volunteers because population is reluctant to work for free. Some volunteers drop out after short time because of heavy workload, opportunity cost of volunteering (days spent hanging LLINs are days not cultivating fields or engaging in other routine remunerative work).	<ul style="list-style-type: none"> - Explain clearly from the beginning that volunteers will not be paid. - Arrange with communities to provide support for volunteers. In some villages, queen mothers agreed to cook for volunteers. In one village, the district assembly representative agreed to provide water. Some villages took up a collection for volunteers. Communities with some arrangement of this type were generally more successful at recruiting volunteers. - Limit workload for all volunteers to a manageable amount. Instead of recruiting a few volunteers for the duration of the campaign, recruit a larger number for a finite task (e.g., one day's work or hanging 50 nets). - It is difficult to recruit volunteers earlier since many will forget and many scheduling conflicts will arise if volunteers are recruited too far in advance. However targeted BCC activities aimed at building support for volunteer net-hangers early on in the campaign may make recruitment easier when the time comes.
Health workers take supervisory positions, but then are unable to supervise volunteers because of competing responsibilities in their health facilities.	<ul style="list-style-type: none"> - Allocate supervisory positions to non-health workers - Arrange with DHMTs / health facilities to grant leave to those health workers involved in supervision.

6.7 Monitoring and evaluation

Issue/concern	Possible solutions
Monitoring data from the Eastern Region LLIN campaign could offer useful lessons for future campaigns. However, systematic data collection and analysis is time consuming and costly. The campaign developed well-designed monitoring forms, but these forms were applied inconsistently. As a result, no systematic monitoring data exists for this campaign.	<ul style="list-style-type: none"> - The NMCP and its partners must first decide whether the potential benefits of collecting systematic monitoring data are worth the costs. - If the decision is yes, future campaigns should develop a protocol, including a sampling frame, determine the level at which to implement it (i.e., by national, regional, or district supervisory teams or some combination) and ensure that all those responsible comply with the protocol. - It is probably easiest to limit implementation to a single supervisory level – e.g., the national level.

Issue/concern	Possible solutions
	<ul style="list-style-type: none"> - Keep protocol and instruments simple to minimize the difficulty and time needed to implement them. - Digital data collection using smart phones or other portable digital devices would eliminate data entry as a separate step and reduce the time needed to analyze monitoring data. - The Alliance for Malaria Prevention (AMP), is issuing a new version of its LLIN campaign toolkit including new monitoring guidelines and tools. This should be posted on AMP's website by mid-2011: http://www.allianceformalariaprevention.com/index.php

6.8 Advocacy

Issue/concern	Possible solutions
<p>Advocacy was not a component of the distribution exercise <i>per se</i>, and thus does not appear earlier in the text of this report. However, some participating organizations felt that others did not coordinate appropriately with the partnership before planning advocacy activities. At one meeting, most partners expressed dismay about a particular partner organization inviting expatriate media into Ghana to film campaign activities for later fundraising. Partners reported that in the past this practice led to media materials that over-emphasized the contribution of one partner at the expense of the others.</p>	<ul style="list-style-type: none"> - The partnership should develop written guidelines on production of campaign-based advocacy materials that are acceptable to all participating partners. These guidelines should describe a process for requesting such approval. Partners should then agree to abide by these guidelines.

7 Appendix A: Day-by-day schedule for field visit (November 29 – December 10, 2010)

Sites visited	People interviewed	Activities
Monday, 29 November		
Accra – ProMPT office	Ato Selby, ProMPT Christie Billingsley, ProMPT Aguima Tankoano, ProMPT	Introductory briefings on LLIN campaign
Tuesday, 30 November		
Accra, USAID	Lisa Kramer, USAID Paul Psychas, CDC	- Review of objectives for process evaluation - Drive to Birim Central
Birim Central, Oda	Felix Nyanor-Fosu, ProMPT	Review campaign progress to date
Wednesday, 1 December (accompanying Felix Nyanor-Fosu, ProMPT)		
Akyemansa DHMT	Isabella Rhule, DDHS Mary Brenn-Bruce, Logistics officer Dorcas Amoah, Health Information Officer	
Birim North - Ntoronang sub district, Nkwateng CHPS center - DHMT	Agustina Galley, Midwife in charge Daniel Adu Asomaning, DDCO Isaac Obeng Tandoh, DHIO Noah Cofie, District Leprosy Officer	Review storage facilities for Birim North LLINs at Nkwateng CHPS center. Since Birim North has no central facility capable of storing a sufficient number of LLNs, the supply for the entire district was stored at this center.
Kwahu West, Nkawkaw	Theresa Dakurah, DDNS/PH	Observe supervisor training
Thursday, 2 December (accompanying Felix Nyanor-Fosu, ProMPT)		
Birim Central	Janet Ampong, Deputy Director of Nursing Services, Public Health	- Observe supervisor training - Observe practice session hanging LLINs in a compound across from the Birim Central DHMT.
Koforidua	n/a	Attend partners' coordinating meeting

Sites visited	People interviewed	Activities
Friday, 3 December (accompanying Felix Nyanor-Fosu, ProMPT; Kofi Osae, NMCP)		
Birim South - Achiase sub district · Achiase · Osoroase - Akab sub district · Biene · Anamase	Kofi Osae, NMCP Ms. Mavis Kwafua, Storekeeper, Achiase sub district	- Observe progress of volunteers distributing LLINs in Osoroase where some residents had refused them entry. - Meet with elders in village of Teshieman to resolve concerns of chief and village authorities. - Meet with Felix Nyanor-Fosu to discuss plans for the coming week.
Saturday, 4 December (accompanying Ato Selby, ProMPT; Otubea Ansah, NMCP)		
Drive from Birim Central to Akwapim South	Ato Selby, ProMPT Otubea Ansah, NMCP	
Monday 6 December (accompanying Aba Bafoe-Wilmot, NMCP; Otubea Ansah, NMCP)		
Upper Manya Krobo DHMT	Aba Bafoe-Wilmot, NMCP Yaw Adjei-Boateng, DDHS Annette Asraku, DCO Richard Ankrah, District Supply Officer	Participate in monitoring visit with Dr. Aba Bafoe-Wilmot and Ms. Otubea Ansah, NMCP
Anyaboni sub district	Betty Gala, Community Health Nurse	Ditto
Otrokpe sub district	Essenam Glover, CHN	Ditto
Asesewa sub district	Francisca Avornyotse, Title? Delale Keteku, LLIN coordinator	Ditto
Tuesday 7 December (accompanying Ato Selby, ProMPT; Stephen Dzisi, Nets for Life)		
Kwahu West - Kwahu West Municipal HD – Nkawkaw - Aweregyn - Atwedie	Theresa Dankurah, DDNS, Public Health Phyllis Gyamerah, Municipal Malaria Focal person Rosamund Olema	- Observe monitoring visits by Ato Selby, ProMPT and Steven Dzisi, Nets for Life - Discuss key messages, concerns with net beneficiaries

Sites visited	People interviewed	Activities
Wednesday 8 December (James Frimpong, NMCP)		
Birim South - Akim Aduasa Community Health Center - Akim Apoli village - Akotekrom sub district - Kokroso CHPS Center, Akotekrom	Lydia Eshun	- Observe monitoring visits by James Frimpong, NMCP - Review security and record keeping at Akim Aduasa CHC - Observe meeting with Queen Mother to resolve problem recruiting volunteers - Discuss key messages, concerns with net beneficiaries
Thursday 9 December (Frances Ocloo)		
Akwapim South - Berekuso - Kitase CHPS center, Aburi sub district	Wajib Mohammed, NMCP Ivy, NMCP	- Check inventory and record keeping at Berekuso and at Kitase CHPS center - Visit compound at Berekuso to observe volunteers hanging nets - Visit Kitase to observe volunteers hanging nets - Discuss key messages, concerns with net beneficiaries - Return to Accra in the p.m.
Friday 10 December		
Accra		Debriefing from field visit, departure for United States

8 Appendix B: Selected documents reviewed

Report on Eastern Region Long Lasting Insecticide Treated Net (LLIN) Distribution and Hang Up Training of Trainers Workshop, August 2010.

Narrative Report on Hang-Up Pre-Registration, Birim North District, 2010.

Report on Long Lasting Insecticide Nets (LLINs) Pre-Registration Exercise Conducted from 14th – 18th September, 2010 in the Akwapim North District.

Kwahu West Municipal Health Administration Report on Pre-Registration for Hang Up Campaign, 2010.

Birim South District LLIN Registration Exercise, September 2010.

Birim North Implementation Plan for LLIN Campaign (Hang-Up).

Report on the ER LLIN Logistics Training – October 05 – 08, 2010.

Report on Pre-Registration Training on Long-Lasting Insecticide Treated Nets Distribution and Hang Up Campaign in Ghana – Kwahu North, September 2010

Narrative Report on Pre-Registration Exercise, East Akim Municipality, August/September 2010.

Meeting of Supervisors – Eastern Region LLIN Distribution and Hang Up Campaign, Eastern Region Health Directorate, Korforidua, Friday, 10th December 2010.

The Global Fund. Monitoring and Evaluation Toolkit: HIV, Tuberculosis and Malaria and Health Systems Strengthening, Part 1: the M&E system and Global Fund M&E requirements, 3rd ed., February 2009.

The Alliance for Malaria Prevention. A toolkit for developing integrated campaigns to encourage the distribution and use of long lasting insecticide-treated nets. 1st ed., September 2008

9 Appendix C: Monitoring instruments used during LLIN distribution

Form A: Supervisory checklist for community level supervision

Form B: Supervisory checklist for district level supervision

Form C: Supervisory checklist for pre-positioning site supervision

LLIN MASS DISTRIBUTION AND HANG-UP CAMPAIGN IN EASTERN REGION, GHANA
SUPERVISORY CHECKLIST
COMMUNITY LEVEL SUPERVISION
MAINLY FOR USE BY SUB-DISTRICT LEVEL SUPERVISORS
(MAY BE USED BY COMMUNITY LEVEL SUPERVISORS IF NEEDED)

Instruction for sub-district level supervisors: Fill 1 form for each hang up team during the campaign.

District _____ Sub-district _____ Date _____
 Community _____ Pre-positioning site _____ Time _____
 Name of supervisor _____ Signature _____

1. Does the team have adequate LLINs needed for the day's work? Yes/NoIf No, why?.....
2. Does the team have adequate tools and materials for the hang-up? Yes/NoIf No, why?.....
3. Observe the team members during hang up in one household from start to finish and record the following:
 - 3.1. Record the start time here (e.g. 2.43pm)
 - 3.2. Did they greet the household head? Yes/No
 - 3.3. Did they explain the purpose of their visit? Yes/No
 - 3.4. Did they ask for permission to enter the room and hang up the LLINs? Yes/No
 - 3.5. Did they hang the required number of LLINs? Yes/No(Check pre-registration booklet)
 - 3.6. Did they affix the sticker after the hang up? Yes/No
 - 3.7. Did they indicate the number of LLINs hanged on the sticker? Yes/No
 - 3.8. Did they give the household members the appropriate message about LLIN use? Yes/No
 - 3.10. Did they record the number of nets hanged using the tally sheet and the pre-registration booklet? Yes/No
 - 3.11. Record the finish time here (e.g. 2.57pm)

(Explain to the team members any corrections and improvements required in private.)
4. Select one other household where the team has done the hang up and do the following:
 - 4.1. Ask the head of the household the total number of people living in the house and the total number of sleeping places in the house and record here: Household population.....No. of Sleeping Places
 - 4.2. Count the number of campaign LLINs hanged and record here.....
 - 4.3. Count the number of sleeping places and record here
 - 4.4. Are the LLINs correctly hanged? Yes/No
 - 4.5. Ask the head of the household if appropriate messages about LLIN use were given to them.
 - 4.6. Is there a sticker posted? Yes/No
 - 4.7. Does the sticker have the number of LLINs hanged? Yes/No
5. What problems were observed and what corrective actions were taken? Use the following table.

No	Problems observed	Corrective action taken

6. Enumerate 3 key observations/lessons learnt? (Continue on the back of the page if required)

LLIN MASS DISTRIBUTION AND HANG-UP CAMPAIGN IN EASTERN REGION, GHANA
SUPERVISORY CHECKLIST
DISTRICT LEVEL SUPERVISION
MAINLY FOR USE BY REGIONAL LEVEL SUPERVISORS
(MAY BE USED BY NATIONAL LEVEL SUPERVISORS IF NEEDED)

Instruction for regional level supervisors: Fill one form for each district.

District _____

Name of supervisor _____ Tel _____ Date _____

Designation _____ Signature _____ Time _____

1. When were the LLINs received at the district level?
 2. Were the LLINs stored in a room/building? Yes/No If No, where?
 3. If stored in a room/building, is the storage satisfactory in terms of:
 - 3.1. Storage capacity? Yes/No
 - 3.2. Security? Yes/No
 4. Inspect the Inventory Control Cards and check if they were used correctly in terms of the following:
 - 4.1. LLINs received
 - 4.2. LLINs issued
 - 4.3. LLINs at hand
 5. When were hammers, nails, ropes, scissors and stamp pads received in the district?
 6. How many pre-positioning sites are in the district?
 7. How many LLINs were transported to pre-positioning sites? (Check Inventory Control Cards)
 8. When was the last consignment sent out?
 9. If there are any LLINs currently in the district store, what is the reason for withholding them?
-
10. Is a written implementation plan available for the implementation of the campaign? Yes/No
 11. What problems were observed and what corrective actions were taken? Use the following table.

No	Problem encountered	Corrective action taken

12. Enumerate 3 key observations/lessons learnt? (Continue on the back of the page if required).

LLIN DISTRIBUTION AND HANG-UP CAMPAIGN IN EASTERN REGION, GHANA
SUPERVISORY CHECKLIST
PRE-POSITIONING SITE SUPERVISION

MAINLY FOR USE BY SUB DISTRICT AND DISTRICT LEVEL SUPERVISORS
(MAY BE USED BY REGIONAL LEVEL SUPERVISORS IF NEEDED)

Instruction for district and sub district level supervisors: 1) Fill one form for each pre-positioning site. 2) You will need number of eligible persons from FORM 2 (Sub-district summary sheet).

District _____ Sub-district _____

Pre-positioning site _____

Name of supervisor _____ Tel _____ Date _____

Designation _____ Signature _____ Time _____

1. How many communities are covered by the pre-positioning site?
2. Number of LLINs allocated to these communities covered by this pre-positioning site (from sub district summary form).....
3. How many LLINs were received at the pre-positioning site?
4. If the number of LLINs received was different from the number of LLINs allocated to these communities, what was the reason?
5. When were the LLINs received at the pre-positioning sites?
6. Where were the LLINs stored? Room ☐ Corridor ☐ Shed ☐ Open space ☐ Other ☐ (Specify)
7. Is the storage satisfactory in terms of
Storage capacity? Yes ☐ No ☐ Security? Yes ☐ No ☐ Suitability? Yes ☐ No ☐
8. Inspect the Inventory Control Cards and check if they were used correctly in terms of the following:
No. of LLINs received..... No. of LLINs issuedNo. of LLINs at hand.....
9. When were hammers, ropes, stamp pads and nails received at the pre-positioning site?.....
10. When did the campaign start?
11. How many empty bags have been received?..... (Check against LLINs issued to volunteers).
12. What problems were observed and what corrective actions were taken? Use the table below:

No	Problem encountered	Corrective action taken

13. Enumerate three key observations/lessons learnt? (Continue on the back of the page if required).