

**Post-Distribution Report:
Universal Bednet Coverage to Prevent Malaria**



**Project Muso, in Partnership with the Against Malaria
Foundation, the Conservation Food and Health Foundation,
Rotary, and the Malian Ministry of Health**

Yirimadjo, Mali, 2011

Introduction

Project Muso Ladamunen, a rapidly growing global health non-profit based in Mali, West Africa, partnered with the Against Malaria Foundation, as well as the Conservation, Food, and Health Foundation and Rotary, to launch a bednet distribution campaign this year in Yirimadjo, Mali. The campaign aimed to ensure that every one of Yirimadjo's 56,371 residents was protected from malaria infection. This bednet distribution campaign formed a core component of Project Muso's Community Based Malaria Program, a comprehensive approach to preventing, diagnosing, and treating malaria. In addition to bed-net distribution, Project Muso trains community health workers to actively search for cases of malaria door-to-door, using rapid finger-prick blood testing to diagnose children with malaria in their homes, treating children for malaria in their homes with artemisinin-based combination therapy, and bringing children with severe illness into the health center for care. By protecting every sleeping space with a bednet, and reaching children early with malaria diagnosis and treatment, the program is designed to save children's lives and stop malaria transmission.

On July 12, 2011 Project Muso Ladamunen (PML) held its bednet distribution kick-off at Yirimadjo's Community Health Center. The event was attended by members from all levels of the government and the Ministry of Health including the National Malaria Control Program, the Regional Director of Health, the Mayor of Commune 6, the Mayor of Yirimadjo, the Medical Director of the District Hospital, and the Regional President of the National Association of Community Health Centers. They came both because there was enthusiasm surrounding such a large endeavor and because their agencies were involved in the planning and build-up to the distribution's launch. The distribution came on the heels of a herculean effort on the part of PML's staff, Yirimadjo's Community Action Committees and research partners in the United States who together meticulously counted the residents of Yirimadjo, calculated the number of nets required, and determined a workable method of distributing them to the population.

In the April, we conducted a household door-to-door census in Yirimadjo to determine the number of residents in each home, how many in each house slept alone or together and, if a household had nets, how many were still in a useable condition. This information was then used to calculate the number of single and multiple person nets each household would receive. To identify households at the time of distribution, telephone numbers, ages of household members and names of children were collected. These were confirmed with recipients at the distribution site before they would receive their allotment of nets.

Our distribution team, led by Dr. Ichiaka Kone, Dr. Fousseni Traore, and Dr. Djoume Diakite picked up the first shipment of nets. They were packaged in bales of 100. Bales were counted and it was revealed that 8 bales (800 nets) had not arrived from our consignment, these we were told were to be delivered later. We randomly selected several bales and counted the number inside to ensure 100 in each and indeed that is what we found. The 238 members of Yirimadjo's 14 Community Action Committees spread the word to the population of Yirimadjo regarding dates and locations of the various distribution sites. We were ready to begin.



At A Distribution Site:

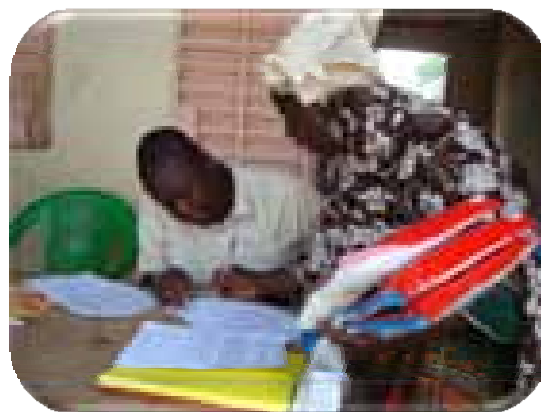
Distributions commenced on July 20th at 10 AM. We chose this hour anticipating that people would begin to arrive at the distribution sites well in advance. Recipients received numbered slips of paper upon arrival so that order could be maintained as crowds swelled (see picture 2)



Picture 2: Typical Distribution Site (Zone 14)

At each site tasks were delegated to PML staff and Community Action Committee Volunteers:

1. Two (or more) PML staff members called numbers, confirmed identities, confirmed net allotments and collected old, unusable nets.
 - Identities were confirmed by recipient lists that include the name of the head of household, names of children in the household and mobile telephone numbers. When a person's number was called he or she would come to the table where this identifying information was confirmed before nets were distributed. The household would then be crossed off the list. (Picture 3)
2. A PML community health worker or education program facilitator taught each recipient, either individually or in small groups of up to 10 people, about malaria transmission, malaria prevention, and proper net usage. (Picture 4)
 - After receiving new nets, recipients were directed to a community health worker who explained the mosquito as the vector of malaria transmission, and the net as a way to protect against infection. She stressed the importance of using the net each night for all members of the household, to tuck it under the bed, and then provided instruction on the upkeep of the net: avoiding tears, periodically washing the nets when they became dusty with non-caustic soap, and drying them in the shade so as to maximize the life of the insecticide. Each recipient made an oral oath in the presence of their fellow community members, promising to use the nets every night throughout the year, to not sell them, and to take care of them appropriately.



Picture 3: Signing for Net



Picture 4: Community Health Worker Alima Kamate teaches about malaria prevention.

3. A member of the distribution team opened each net package to dissuade resale by recipients. (Picture 5) As a condition for receiving nets we asked recipients to bring their old and/or failing nets to the distribution site where we could collect them for disposal. We asked this so that we could ensure that the nets we gave would not simply be resold. If a recipient failed to bring their old nets we asked them to return home and bring them back. In several cases in which a recipient and a witness claimed there were no nets at home, we did not refuse the household their scheduled allotment of new ones.

In mid-August a second delivery of nets arrived totaling 1300. The nets in the second shipment were of a lower price than the initial anticipated shipment (they were the rectangular model, rather than the more expensive circular model) and so we received an extra 500 nets beyond the expected 800. With these extra 500 nets we were able to mobilize a total of 22,500 nets.



Picture 5: Opening Nets to Prevent Resale

One of our staff members working at the distribution describes a typical day as follows:

“I would arrive at the distribution site at 9 AM. Often a large number of women and children had arrived very early and were waiting in a line, many since 6 AM. They were anxious to be the first served. Nonetheless we would arrive before the majority of recipients showed up. Djoume (our team leader) would arrive at around 9:30 ahead of a van that we had employed each day for the purpose of bringing the mosquito nets from the storage facility at the health center to each of the distributions sites. Our first act was to hand out numbers to those who had shown up before us. This would allow us to get people out of the crowded pseudo-line, which they had formed in the sun and into shaded areas where they could comfortably sit without having to worry about whether they would be served or not. We continued to hand out numbers as more people arrived in order of their arrival. We called numbers one at a time to come and collect their new nets until we finished with the list. Those who arrived very late or as we were closing were asked to come the following day to retrieve their nets.”

Most recipients were aware of the importance of the nets and expressed such sentiments at the distribution sites:

“We know the nets are important for our children and family. That is why I came early.”

“Thank you so much. God Bless you. My children and I are plagued by mosquitos”

When asked their opinion on the how they felt following the training sessions with CHWs and education program facilitators, recipients expressed enthusiasm about making sure their families slept under the nets every night and that they would keep them in good condition.

Challenges:

We had several challenges in our path ranging from recipient identification to bureaucratic interference.

Specifically:

1. The method of identification of beneficiaries with verification documents slowed the work. Distribution lists were long and there are a large number of people with the same last name living in Yirimadjo. People often change telephone numbers and have children with similar names. This resulted in much confusion when trying to verify the identity of recipients. To overcome this challenge, we utilized both printed and electronic participant databases as references on site. Our

printed recipient lists included only head of household name, phone number, number of nets to recuperate, and number of new single and multi-place nets to distribute. To aid with difficult-to-identify households, each distribution site had an expanded electronic list that included geographic location of the household, and names and ages of other household members

2. There were more people who came to the distribution than there were on the distribution list.
To receive nets it was essential that a household be included in our original the census. Some households were not reached by the census and therefore were not included in the original distribution list. Yirimadjo is a rapidly growing peri-urban area with significant in-migration ongoing. Some households recently moved to the area and thus were not present at the time of the census, or refused to participate in the census. Without answering the census there was no way to account for their family or the number of nets that they needed. We addressed this challenge by re-surveying households that were missed because of issues such as migration.
3. Delays and Completion: While some days experienced great turnout others were slower than expected, in part due to the time required to verify identities of each recipient. The slow days prolonged the distribution period we had originally intended and as a result our budget for the stipends and lunches that we provided to our community volunteers' serving on the distribution teams was depleted before completing the distribution. As a result, distribution activity came to a halt during a two week period spanning August 30th through September 14th. When the resources necessary to provide compensation and meals to the volunteers were found, and just before beginning the distribution afresh, we were contacted by the Mayor and asked to pause operations to discuss further involvement by local and district government authorities. The distribution was then placed on hold for a further week September 14th through the 21st. By September 21st the urgency associated with the rainy season's heightened prevalence of malaria was too great to bear further delay and we reconvened the mayor's office and requested to immediately restart, which he approved. On October 4th the last of the 22,472 mosquito nets was distributed, reaching our targeted goal for universal coverage and exceeding it in order to cover new immigrants into the area.
4. Bureaucratic Interference
We made immense effort to engage local and district government authorities in partnership with our distribution and we were buoyed by their support. So it came with some surprise that at the end of August they asked for us to halt distribution so that they could include themselves more. Ultimately we swayed them to let us continue given the urgency of the rainy season and the distribution was completed soon thereafter. While this challenge led to an unanticipated delay in distribution, it is an indication of the extent to which government interest in the distribution, already strong at the launch, grew so greatly that we essentially had new government agencies coming to us and saying, "Hold on! We want to be involved too!" As one of the first sites of universal bednet distribution in Mali, Project Muso's work in Yirimadjo has attracted significant attention from government partners for its potential to be a national model.

Timeline

- Distribution begins July 20th 2011
- 25% of nets distributed August 1st 2011 [6,476 NETS]
- 50% Of nets distributed August 10th 2011 [11,274 NETS]
- 1300 additional nets arrive August 15th 2011
- 70% of nets distributed August 26th 2011 [15,424 NETS]
- Activities are suspended August 29th 2011
- Distribution resumes September 21st 2011
- 100% of nets distributed October 4th 2011 [22,484 NETS]



Next Steps, Measuring Our Impact:

In the analysis of our 2011 bednet need assessment, which surveyed each of Yirimadjo's 11,017 households, we calculated that 22,372 additional nets were needed to protect every person in every sleeping space in Yirimadjo. The 22,500 nets mobilized for this distribution enabled us to meet that universal coverage goal and exceed it, so that we could also protect households that had recently moved to Yirimadjo and did not participate in our initial census. Sixteen nets (0.07%) were lost in transport. We distributed 22,484 nets in total. Table 1 provides details on the number of nets distributed in each zone.

This distribution was a historic moment for the communities of Yirimadjo and for Mali, as one of the first areas of the country to complete a universal coverage bed net distribution. Tens of thousands of community members now sleep safely at night, protected from malaria transmitting mosquitos. We are sharing the results of our intervention with the National Malaria Control Program to inform national efforts to fight malaria.

Project Muso shares the Against Malaria Foundation's commitment to rigorous, evidence-based work. We have put into place systems to measure the impact of this distribution on bednet ownership, bednet usage, and malaria prevalence.

Zone	Bed Nets Distributed	% Predicted
1	973	101%
2	2,933	99%
3	568	101%
4	716	101%
5	1,442	100%
6	797	102%
7	1,371	100%
8	1,492	100%
9	1,038	99%
10	1,141	98%
11	1,070	115%
12	571	99%
13	1,140	99%
14	756	99%
15	749	101%
16	1,749	101%
17	706	100%
18	665	98%
19	981	101%
20	1,614	99%
Distributed at Launch Event	12	
Total Distributed	22,484	101%

The Annual Malaria Prevention and Treatment Survey

Project Muso utilizes an annual randomized household survey to track progress in achieving key outcome indicators for malaria control and child survival. A cluster-based, population-density weighted sampling methodology is employed to attain a representative sample of the Yirimadjo population. The survey, adapted from Rapid Catch and DHS tools, was administered at baseline in June 2007 and subsequently each June.

The survey will be administered each subsequent June to 1200 randomly selected households to measure:

- Infant mortality (DHS methodology)
- Under-5 child mortality (DHS methodology)
- % under-5 children, pregnant women, and all persons sleeping under a treated bednet the previous night
- Household net ownership
- % of under-5 children tested and/or treated with an effective antimalarial within 24 and 48 hours of symptom onset
- % of pregnant women who appropriately took malaria prophylaxis during pregnancy.

Community Health Worker Data Collection

Community Health Workers have been collecting, for the past two years, monthly data on the % of children who test positive for malaria, providing a surrogate measure of malaria prevalence in the communities we serve. By tracking trends in malaria prevalence before and after the bednet distribution, we will be able to assess how the distribution has affected malaria transmission within Yirimadjo.

We are grateful to the Against Malaria Foundation, the Conservation, Food, and Health Foundation, Rotary, and the Malian National Malaria Control Program for the support and partnership to make this endeavor possible.

