

# **MALAIKA PROJECT**

## **Malaria Program**



# MALARIA PROJECT VOLUNTEER MANUAL

This manual contains information regarding the Malaika Project Malaria volunteer program in Nyamuswa, Tanzania. It was compiled by Stephanie Wilmore, Malaika Project Malaria Program Director, who volunteered in the village in the summer of 2005, Jennie Howland, Malaika Project Founder and Coordinator, and Malaika Project Malaria Program Coordinators, Nirali Desai (volunteer 2004), Adrienne Best (volunteer 2005), and Alexandra Kazanovicz (volunteered 2005). We hope that you carefully read the manual to ensure that your work and that of future volunteers runs as efficiently as possible.

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## 1. PREPARING FOR THE PROJECT

It is essential that volunteers gain an understanding about Malaria in Nyamuswa and what previous volunteers have done. To maximise the use of your time there and avoid repetition and inefficiency, all volunteers should read previous volunteer work and talk with previous volunteers. This will help you formulate an action plan before you arrive in the village and enable you to contribute to the future of the Malaria Program.

### **Malaria and ITNs**

Malaria is caused by a single-celled protozoan parasite. Of the four which infect humans, *P. falciparum*, *P. vivax*, *P. ovale*, and *P. malariae*, *Plasmodium falciparum* is the most deadly. This disease is primarily transmitted to humans by the bites of Anopheles mosquitoes.

The early signs of malaria include fever, headache, and nausea. In later stages, “*P. falciparum* causes high levels of parasitemia, severe anemia, cerebral symptoms, renal failure, pulmonary edema, and death” (Kumar, 2005). In children, malaria results in anemia, low birth-weight, epilepsy, and neurological problems. Malaria also adds complications to other diseases such as HIV/AIDS and tuberculosis. Despite its seriousness, malaria can be cured with effective and timely medications.

The grim statistics on malaria demonstrate the urgency of controlling this disease. Each year, there are about 300 million cases of malaria and 2.5 million deaths, 90% of which occur in Sub-Saharan Africa, and 70% in children under 5. In Africa, malaria is the cause of "40% of public health expenditure, 30-50% of inpatient admissions, and 50% of outpatient visits" ("Malaria in"). Malaria in Africa is difficult to treat, because the strains are becoming increasingly resistant to both Chloroquine and Sulfadoxine-Pyrimethamine (SP), the cheapest drugs currently available ("Malaria in").

Because of the relatively high cost of treatment and prevention, malaria has hit the poorest areas the hardest. The disease affects children most severely, and prevents them from attending school and earning money for their families. Employment and productivity decrease because of malaria ("Economic Consequences"). Africa loses over \$12 billion USD in GDP because of Malaria each year ("Malaria in").

Insect Treated Bednets (ITNs), have been shown to be the most efficient and cost-effective measure to prevent malaria and recent studies show that their widespread use can significantly decrease mortality and morbidity due to malaria. Because most female Anopheles mosquitoes bite between dusk and dawn, night is the best time to prevent bites. ITNs are hung around a person's bed at night, and they provide a barrier and repellent against mosquitoes and shorten the insect's life span ("Insecticide-treated"). The WHO, national governments, and non-profit organizations have taken steps to prevent malaria with ITNs, such as the WHO Rollback Malaria Project of 1998 and the decision of 20 African countries to reduce the taxes and tariffs on insecticide treated nets ("Malaria in"). Studies have also proven the effectiveness of social marketing and providing discounts on ITNs for using vouchers and trading in old nets (Mushi). Because it will take many valuable years to create drug therapies to overcome resistance and to make these antimalarials affordable, ITNs are the most feasible, affordable, and effective option for residents of the hard-hit areas (Martin).

## **Malaria in Nyamuswa**

Malaria is the main cause of morbidity and mortality in the area, as well as the most common illness in both adults and children at the government-funded Ikizu clinic in Nyamuswa. The surrounding smaller villages either have small health dispensaries (which provide medicines and minimal health care) or no health facility at all. Thus, people come to Nyamuswa to seek care. According to records from the Ikizu health clinic, from July 2003-June 2004, there were an average of 541 cases and 2.4 deaths from malaria per month. This situation worsens in the rainy seasons, though there are a significant number of cases in the dry seasons as well.

Due to the vast impact of malaria on the Nyamuswa community, the government and NGOs have currently established several services for malaria prevention and treatment. In May 2004, the WHO provided limited bed nets to several clinics, including the Ikizu clinic, to sell at a discounted price of Tsh 2,500 (\$2.50 USD each). The WHO has also trained village health workers to go door-to-door educating families on sanitation, HIV, and malaria. A local youth drama group does health education plays about HIV, malaria, and other topics at village gatherings. In terms of government services, mandatory prophylactic SP is given to all pregnant women and free health care to children under 5. The doctors in outpatient services at the government clinics do malaria education for pregnant women, or patients presenting with malaria. Nurses also do weekly education on different topics for admitted patients. Another important venue for malaria education is in schools. Students in primary and secondary school receive health education on malaria prevention every few years, which varies by school.

## 2. MALAIKA ITN PROJECT

### Timeline

- **Summer 2004-Nirali Desai**
  - Conducted focus groups and individual interviews to study on the barriers to ITN use in Nyamuswa. This research project assessed the knowledge, attitudes, and practices regarding the etiology, prevention, and treatment of malaria in the village of Nyamuswa, Tanzania.
  - Met with the healthcare providers at Ikizu health center, Bunda district hospital, and Dr. Kebwe (the district minister of health)
  - Shadowed med students at Bunda district hospital
  - Spoke with a natural healer in Nyamuswa about malaria
- **Summer 2005-Stephanie Wilmore, Alex Kazanovicz, Adrienne Best**
  - Collaborated with the WHO and village health worker to conduct the National Census on the use of insecticide treated bednets (ITNs) in Nyamuswa.
  - Established a survey of a sample of 30 households to assess ITN coverage, awareness about malaria and ITN use as well as measure the size of beds in those 30 households.
  - Performed a focus group meeting to further assess the community's knowledge about malaria prevention and their perceptions and use of ITNs, and to educate them about ITNs.
  - Conducted interviews with Village Health Worker, Village Executive Officer, District Health Center Doctor, Village Health Nurse, Zinduka board members and Nyamuswa Drama Group members about the Malaika ITN Project to increase ITN coverage.
  - Educated the appointed Zinduka members involved in the project about malaria, ITNs and Microsoft Excel.
  - Ordered ITN at a reduced price from George at A to Z factory in Arusha, they were delivered to Mwanza. Max and the volunteers then took them to Nyamuswa.
  - Established a system of selling nets at Zinduka,
  - Sold about 350 nets! Zinduka keeps records of who buys each net. Each net was accompanied by an info sheet (see appendix G). They also established a revolving fund to buy new ITN with money from ITN sales.
  - Conducted a follow-up survey of 50 households about bednet usage in general, bednet usage for children under 5, and bednet conditions. People were educated on using NGAO (insecticide), using nets for every member of the household, and were also told about the nets being sold by Zinduka.
  - Collaborated with the Nyamuswa Drama Group to promote ITN sales in other villages in conjunction with their performances.
  - Planned for a "Nyamuswa re-treatment and education day" to be conducted yearly starting in summer 2006.
- **Dec 2005-Kinna Thakarar**
  - Purchased discounted ITN's at Mohammed Kara & Son shop in Mwanza
  - Went door-to-door and sold ITN's in Nyamuswa

- Collaborated with translator and conducted a door-to-door survey to assess ITN coverage, NGAO use, and to understand attitudes towards ITN use
- Collaborated with Nyamuswa drama group, who performed HIV/AIDS and malaria-related plays on market day. Questions about HIV/AIDS and malaria were also presented to the audience.
- **Feb 2006-Maria Keating**
  - Met with Zinduka's Malaria Project Coordinator, Mussa, to exchange ideas and formulate plans for an NGAO re-treatment day, further malaria education, and future net sales
  - Met with Nyamuswa Drama Group to solicit their help with future net sales and with a re-treatment day in Summer 2006 and to educate them further about malaria and how they can incorporate new knowledge about the disease, especially the use of NGAO, in their songs and skits
  - Met with Ikizu Health Clinic workers to solicit their support of future net sales and to further educate them about malaria, focusing on the importance of using NGAO
  - Translated the ITN Follow-Up Survey and conducted individual surveys with community members who bought nets during Summer 2005
  - Spoke with George from A-Z Factory about net prices and delivery, was informed that lorries no longer pass through Nyamuswa but discounted nets could be purchased from their Arusha factory

## Community Research Findings



Individual interviews confirmed that malaria was a common problem in the Nyamuswa area. Eighty-seven percent of participants in individual interviews had suffered from malaria in the past, and had contracted malaria an average of two times in the last year. Community focus group participants agreed that malaria caused economic stagnation, poorer health, and death. Economic losses were caused both by money spent on treatment and from lost days of work of both patients and caretakers. Community members reported that improper treatment led to recurrent illness and insufficient funds for future treatment. Residents often sold personal belongings to pay for expenses. Children are particularly vulnerable, suffering long-term consequences such as disability and death as well as lost days in school. The women mentioned miscarriage as a major consequence of malaria, and that most pregnant women in the village did indeed take advantage of the free prophylactic SP offered at the health clinic.

Nyamuswa community members have a good understanding of malaria transmission and prevention. Focus groups unanimously agreed that malaria was spread by mosquito bites and that bed nets were the most effective prevention. Some people also believe that chronic diseases are caused by witchcraft, such as bewitching from neighbour conflicts, and seek treatment from a natural healer rather than a conventional doctor. Residents cited various other malaria prevention strategies, including cleaning the environment (cutting tall grasses in one's yard and removing standing water), and burning herbs to repel mosquitoes. Some mentioned insecticide spray in the house. Others thought of SP for pregnant women and shutting doors and windows at dusk. When asked where people learned about malaria prevention, some participants commented that the youth group plays were the most effective mode of educating the community while others said schools, village meetings, and door-to-door education were most successful.

The WHO, Tanzanian government, and Malaika Project research projects have confirmed that a very low percentage of the Nyamuswa community sleep under a bednet, estimated at less than 10%, and even fewer sleep under an *insecticide treated net* (ITN). The largest barrier to widespread ITN use is the prohibitive cost they represent for the large majority of people. Another common reason why people did not use ITNs seasonally was that there were fewer mosquitoes in the dry season. While many households have at least one bednet, very few households have enough bednets to cover all members of the household. Malaika Project research found that less than half of the people surveyed slept under a net, and less than half of the households treated their nets. Only 25% of children under 5 slept under a bednet. In addition, some bednets are in poor condition. Most (59%) of households with at least one net reported that their nets needed to be replaced. In the focus group, the majority of the participants agreed that if the household did not have enough bednets, children and pregnant women should be prioritized. Most people stated a fair price to pay for a net would be Tsh 1,000-1,500 (\$1-\$1.50 USD).

## **Malaria Education**

Nyamuswa Drama Group (NDG) is a youth group which performs plays to educate the community about malaria and other health problems and addresses health behaviours. Their audience is largely illiterate. Their members also collaborate with Malaika Project volunteers on the community surveys, and they incorporate the results into their plays. Some of them speak English, and the rest are eager to learn: in 2005 a volunteer invested her time and some of her programme fees in teaching them English on rented premises. For volunteers working on the malaria project, there are always opportunities to teach in Nyamuswa.



Malaria survey results confirm that the NDG is one of the most effective ways to promote ITNs. Malaika project has provided Nyamuswa Drama Group members with bicycles to reach out to more rural communities. Volunteers helped them get t-shirts so that they will be more easily recognized and drums to call people to their meetings. They are now requesting a loudspeaker system to broadcast their performances to a wider audience. The NDG plays a crucial role in the Malaika malaria ITN project.

## **Insecticide-treated net (ITN) Distribution**

The Malaika ITN Project has been established to specifically focus on providing ITNs to reduce the prevalence of malaria in the Nyamuswa population. The Village Health Worker, Village Executive Officer, District Health Center Doctor, Village Health Nurse, Zinduka board members and Nyamuswa Drama Group have agreed to collaborate to distribute ITNs throughout Nyamuswa.

During the summer of 2005, ITNs were obtained from the local A-Z factory in Arusha, Tanzania. The cheapest rates thus far, for a good quality net are Tsh 2800 (\$2.80 USD) for square 4x6x7 ft ITNs, and Tsh 2,650 (\$2.65 USD) for round 3.5x6x7 ft ITN. Through a revolving fund, the initial 100 bednets were sold and profits used to buy and sell an additional 250, so 350 ITNs have been sold so far!



Small ITNs were sold for Tsh 2000 and larger ones for 2500. A malaria information sheet was given out with each net. The aim of this project is to subsidize the cost of ITNs to 1000 Tsh, which will be an affordable price for most people.

### **3. FUTURE DIRECTIONS**

It is anticipated that the increase in ITN use in the community will have significant impacts on malaria morbidity and mortality in Nyamuswa and the surrounding areas. The Malaika Malaria Project thus hopes to be an important initiative in malaria prevention, education, treatment, and community well-being.

#### **Malaria education and distribution of more ITNs**

Our goal is to become a United Nations ITN distribution site. Our plan is to provide an ITN for every person in Nyamuswa, and reduce the incidence of the most common illness. We also plan to increase collaboration with the Nyamuswa Drama Group to conduct village meetings where they will perform plays about malaria and then sell discounted ITNs. Because they travel to distant villages, the NDG could increase ITN use in rural communities. The Ward Education Officer has agreed to help coordinate community after-school events. This would include inviting families and the students, to watch the Nyamuswa Drama Group to perform. Malaria education should emphasize that one mosquito can cause malaria, even in the dry season. Everyone should sleep under a bednet everynight, and bednets should be treated with NGAO after four washings or once a year. Because there are an average of 6.03 adults and 4.74 children per household, several ITNs are needed at each home. Because Nyamuswa is largely a farming community and most people are paid in from June-August when they sell their cotton, a good time for ITN sales is in the summer months, just before the start of the rainy season. A good colour for ITNs is blue, because they appear less dirty with time.

To help with logistics of ITN sales, volunteers should monitor the financial aspects, and work with Zinduka to make sure that all records of ITN sales are well organized. The A-Z factory has offered to deliver bulk orders directly to Nyamuswa at no shipping cost. Volunteers can search for more cost-effective ITN distributors, and review what successful methods the government and other NGOs have had for ITN distribution and malaria education. Once we have the ability to reduce the price to Tsh 1,000, this would increase access to ITNs for poor rural households. Some ITNs will have to be donated free of charge to the severely poor. This last option might be best attempted once most of the village is covered, when those who can afford discounted ITNs have bought them.

#### **Retreatment of ITNs**

Establish bi-annual “Nyamuswa re-treatment and education days” to be conducted on market day (Sunday) in conjunction with the village health worker and Ikizu clinic. Nyamuswa Drama Group can perform educational plays. People should bring every net in their household to be re-treated on this day. Malaika Project volunteers will be available to educate the community on bednet and insecticide usage. Retreatment will be offered at a low cost (Tsh 100-300) since this is the price that focus groups in the community stated was affordable. The price of insecticide has previously been a barrier to retreating ITNs in Nyamuswa, and this occasion would also avoid the hassle of re-treating nets individually. Nets will be labelled with a number, and records kept of each family, so that we can track future retreatments.

## **Community research projects**

- 1) Follow up surveys- The ITN sales have initially been targeted towards Nyamuswa, so that a follow-up survey can be more easily conducted.
- 2) Expanding beyond Nyamuswa- More research is needed in the smaller, more remote villages surrounding Nyamuswa. Since most of those interviewed were in Nyamuswa, they may have easier access to malaria education and ITNs. Consider going out with Nyamuswa Drama Group to rural communities and conducting focus groups to assess if health beliefs are different in the surrounding villages.

## **Malaria Treatment**

Many people are inappropriately treated with SP for malaria since the district has an oversupply of this medication. But focus groups have found that many people have to go back for repeat treatment after treatment failures from SP. Malaika Project is helping Zinduka to set up a pharmacy which will offer artemisinin combination treatments for malaria, which are recommended by WHO in Tanzania, where high resistance to SP has been documented.

## **Fundraising**

Previous volunteers have been raising funds for the bednets, and retreatment days. The \$100 you bring with you to go towards your project can also go to bednets, but the more you can raise before you come, the more you will be able to provide Nyamuswa residents with the tools they need to prevent and treat malaria. You could fund through raffles and other organised events (at the University level or through donations from organizations) so that bednets can be purchased and the bednets could all be treated on Retreatment Day. You will need money to pay translators for your surveys, for focus groups, and to pay workers to retreat the bednets, and for transport out to rural areas.

## 4. GETTING STARTED

The first thing is to develop a plan of where you are going to be involved. Refer to the map of Nyamuswa and develop a game plan before you arrive in the village.

### WHAT TO BRING (Specific to the malaria project) (see volunteer manual for more general suggestions)

Volunteers are asked to **fundraise** extra money for travel costs, internet use, photocopy fees, paying survey participants or translators, paying for building supplies, medications, etc. You are asked to contribute \$100 to Zinduka towards a capital project, such as water tank construction. The other \$100 that you are asked to bring with you is precisely for some of the other above costs, so that you can cover the expenses of your project while you are there. The more you fundraise, the more you will be able to contribute.

Any malaria or ITN **information leaflets** that can be handed out with bed nets would be appreciated, especially if they are all pictures for illiterate people. One of the translators can help you translate the info into Swahili. Please see the handout that has been prepared by Malaika Project previous volunteers in Appendix G.

Volunteers could also bring any form of **props** that can be used by the Nyamuswa drama group to enhance their performance in any way e.g. funky clothes, hats.

### WHO TO CONTACT

Please contact Max Madoro (see Contacts) BEFORE arriving to let him know how and when you will be coming. He is the local coordinator and does speak fluent English. This helps him by making the least amount of trips (this is important as he is often the only one in Zinduka who is able to come and meet you in Mwanza).

Contact the following people as soon as possible after arriving to the village:

**Ikizu health centre:** Local government clinic in Nyamuswa, small lab, deliveries, prenatal care, basic healthcare. Dr. Chrysostom Mbonamengi will help you find any more information on the malaria situation in Nyamuswa. Dr. Magoti may also be helpful.

**Village health worker** (named Prisca) to carry out any more household surveys. She is paid by the hour or per day (Tsh 3,000/day). She does not speak English so bring a translator. Her job is to visit homes throughout the villages to educate people on various diseases in the area.

**Nyamuswa Drama Group** to arrange a schedule. (ask any Zinduka board member to coordinate a meeting). Several members of the group speak English.

**Ward Education Officer,** Hassan Ramadhan, to coordinate education in the schools (just ask any one in Nyamuswa to bring you to his office)

### **Translators**

Previous volunteers have used Fyeka Sumera, Wandwe Masebe, and Aloyce Bwire from the Nyamuswa drama group as they speak excellent English. Amos Mwibire, Zinduka secretary, can also translate. A suggested translation payment is Tsh 3000/day (less for part of the day).

## **Purchasing ITN (see Contact Info below)**

### A-Z Factory-ITN factory

George-distributor from A to Z factory in Arusha

Noor Mohammed Kara and Son's store in Mwanza

## **5. MALARIA CONTACTS**

### **Volunteers/Coordinators**

Stephanie Wilmore, Malaika Project Malaria Program Director, Volunteer 2005  
London, UK

Email: [stephaniewilmore@gmail.com](mailto:stephaniewilmore@gmail.com)

Jennie Howland, Malaika Project Founder and Coordinator  
Massachusetts, USA

Email: [jenniemalaika@yahoo.com](mailto:jenniemalaika@yahoo.com)

Alex Kazanovicz, Malaika Project Malaria Program Coordinator, Volunteer 2005  
Massachusetts, USA

Email: [akazanovicz@hotmail.com](mailto:akazanovicz@hotmail.com)

Adrienne Best, Malaika Project Malaria Program Coordinator, Volunteer 2005  
Canada

Email: [agebest@yahoo.com](mailto:agebest@yahoo.com)

Nirali Desai, Malaika Project Malaria Program Coordinator, Volunteer 2004  
Chicago, IL, USA

Email: [nirali\\_desai@rush.edu](mailto:nirali_desai@rush.edu)

### **Zinduka Members**

Box 51

Bunda, Mara

Tanzania, East Africa

Office phone: 011-255-28-262-1351

Email: [zinduka02@yahoo.com](mailto:zinduka02@yahoo.com)

Max Modoro, Zinduka Coordinator

Cell Phone: 011-255-745-478-728

Email: [mmadoro@yahoo.co.uk](mailto:mmadoro@yahoo.co.uk)

Mramba Simba, Zinduka Chairman

Email: [smbmramba@yahoo.com](mailto:smbmramba@yahoo.com)

Amos Mwiburi, Zinduka's vice secretary

Muse Musawe, Zinduka secretary

Hamisi Sungura, Treasurer

Khamisi Kiboko. Children's Programs Coordinator

## **Nyamuswa Drama Group**

Youth performance education group in Nyamuswa. They participate in community research and community health education, and several of them speak English.

Wandwe Masebe, Chairman  
Email: [wmasebe@yahoo.com](mailto:wmasebe@yahoo.com)

## **Nyamuswa schools**

Hassan Ramadhan, Ward Education Officer of Nyamuswa  
Mailing address: Box 126, Bunda, Mara, Tanzania, East Africa

Mhono W., Headmaster of Makongoro Secondary School  
Mailing address: Box 492, Bunda, Mara, Tanzania, East Africa

### **Makongoro Secondary School**

This government-owned school has four grades and about 400 students. The standard of English is moderate with some translation needed for the younger classes. It is 2-3 km from the centre of Nyamuswa (a 20-30 minute walk).

### **Ikizu Secondary School**

This private school is run by the Seventh-Day Adventist Church with six grades and about 1000 students. The standard of English is very good. The school is about 5 km from the Nyamuswa centre, in the Bukama village. It is accessible by taxi or about 40 minutes on foot.

### **Bunda Secondary School**

This government-owned school has four grades and about 400 students. The standard of English is similar to Makongoro. It is about 3 km from the Bunda town centre (along the road to Nyamuswa) and is easily accessible by taxi (Tsh 1000) or by walking (get dropped off by the sign for the school on the way to Bunda from Nyamuswa).

### **Bunda Secondary School – Institute for Adult Education**

This small school, with 100 students in four grades, is located about 1 km from Bunda Secondary School. The students at this school have a good standard of English.

### **Primary Schools**

You may also wish to teach in the primary schools, but you will need to bring a translator. There are four primary schools within the village of Nyamuswa and countless others in every surrounding village (Jain et al., 2005)

## **In Bunda:**

### **District Ministry of Health**

Dr. Kebwe, District Medical Officer  
Cell phone: 0748642786  
Email: [kebwesk@yahoo.com](mailto:kebwesk@yahoo.com)/ [skkebwe@yahoo.com](mailto:skkebwe@yahoo.com)

### **Bunda District Hospital**

Dr. Julius Rugambwa  
Email: [drugambwa@yahoo.co.uk](mailto:drugambwa@yahoo.co.uk)

Dr. Charles Katigwa (head doctor)  
(contact via Dr. Kebwe)

Chris, Cinical Officer – excellent educator on Malaria  
[chrissykuds@yahoo.com](mailto:chrissykuds@yahoo.com)

Mulemwa E.E.M., Bunda District Administrative Secretary  
Box 250  
Bunda, Mara,  
Tanzania, East Africa”

**In Arusha:**

A-Z Factory-ITN factory  
A to Z Textile Mills Ltd.  
PO Box 945  
Arusha, Tanzania  
057-3311/2375 Fax: 057-8235

**George**-distributor from A to Z factory  
0744302617

**In Mwanza:**

Noor Mohammed Kara and Son’s store in Mwanza (referred by George, we bought some ITN there, but try not to buy their low quality nets)  
0282540060

## 6. USEFUL SWAHILI PHRASES

**Homa/Malaria** (pronounces slightly different) Malaria

**Chandarua** Mosquito net

**Ngao** insecticide

**Mbu** mosquito

**Hujambo?** (informal) **Shikamo?** (formal \*used for all elderly people= respect) Hello?

**Jina lako nani?** What is your name?

**Tafadhali...** Please

**Asante sana...** Thank you very much

**Kwaheri...** Good bye

**Una miaka ngapi?** How old are you?

**Unafanya kazi gani?** What work (employment) do you do?

**Kwa nini wanafanya hivyo?** Why do they do that?

**Fundisha** Teach/educate on..

**Shilingi ngapi?** How much is that/it?

**Moja-** One

**Mbili-** Two

**Tatu-** Three

**Kumi-** Ten

**Ishirini-** Twenty

**Thelathini-** Thirty

**Mia moja-** One hundred

**Elfu moja-** One thousand

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Appendix A1

**Barriers to Malaria Prevention in Tanzania, Africa (2004)  
Focus Group Questionnaire**

***Malaria in General:***

- 1) How does malaria affect the village and its residents? (economics, education, healthcare)
- 2) How do the residents believe malaria is spread? The health clinicians? The natural healers? (mosquitoes, witchcraft)

***Prevention:***

- 3) What can the residents do to prevent malaria? Which ways do the residents use? Are they effective? (mosquito bites, environmental)
- 4) Where did you hear about how to prevent malaria? Where do your children find out how to prevent malaria? How? When?

***ITNs (insecticide-treated net):***

- 5) Do you think people in Nyamuswa use bed nets?
- 6) Who uses them? Why? (health) Who doesn't? Why not? (cost, inconvenience, appearance, traditions)
- 7) How do they use them? (hung around bed, used as window coverings) How often?
- 8) Do you think bed nets work? Why or why not?
- 9) Are the bed nets treated? Why or why not? With what? How often?
- 10) What makes it hard to get a bed net? (cost, accessibility)

***How to increase ITN use:***

- 11) What help is available from outside Nyamuswa to prevent malaria? From the government? From NGOs? (vouchers, discounts, bed net exchange program, education)
- 12) Are there any resources for pregnant women?
- 13) Do you think pregnant women in the village use SP to prevent malaria?
- 14) How much do bed nets cost here? How about insecticide?
- 15) What is a fair price to pay for a bed net? How about insecticide?
- 16) Do you know anyone who has a bed net and doesn't use it? Why? How could we encourage them to use their nets?
- 17) What are some good ways to tell people about using bed nets? (door-to-door, posters, events, school)

***Treatments:***

- 18) How do people treat malaria? (Western medicines, natural healers) Where do they go first? How long do they wait before getting treatment?
- 19) What medicines are used to treat malaria? Which ones are more common?
- 20) What makes it hard to access malaria treatments? (medicines) Is it difficult here in Nyamuswa? In surrounding areas? Why or why not?
- 21) Are any residents afraid of malaria treatment? Why? (side effects, stigma, hospitalization, etc.)
- 22) Are there diseases that people here worry about more than malaria? What are they?

Appendix A2

**Barriers to Malaria Prevention in Tanzania, Africa (2004)  
Individual Survey**

Date:

Participant number:

***Personal Information***

1. Gender:
2. What is your age?
3. What village are you from?
4. How many adults live in your house?
5. How many children live in your house?
6. What do you do for work?
7. What does your spouse do for work?
8. How much money does your family earn in a month/year?
9. How many years of school have you completed? College? University?

***Personal and Family Health History***

10. Have you had malaria?
11. How many times last year did you have malaria?
12. How has malaria affected your family? Explain.
13. Are you pregnant?
14. If yes, are you taking SP? If not, did you take SP when you were pregnant?

***Malaria Prevention***

15. How do people get malaria?
16. What can people do to avoid getting malaria?
17. Which methods do you use?
18. Who taught you how to prevent malaria? When? How?
19. (if children) Do your children know how to prevent malaria?
20. If yes, who taught your children how to prevent malaria? When? How?
21. Do you know if the government or NGOs provide any help to prevent malaria?  
(discounts, education)
22. What are some good ways to tell people how to prevent malaria? (door-to-door, posters, town meetings)

***ITNs***

23. \*Do you use bed nets? (skip if previously answered)
24. If yes, how many times per week do you use the bed net in the rainy season? Dry season?
25. If not daily, why don't you use a bed net every night?
26. Why did you decide to use the bed nets?
27. Does every bed in your home have a bed net?
28. Is there anyone in your home who does not sleep under a bed net? Why?
29. If no, did you use bed nets before?
30. Why did you stop using them?

31. Explain how you set up a bed net. (hang them around a bed, use them as window coverings)
32. Did you receive instructions when you first bought the bed net? Explain.
33. Do you get fewer mosquito bites when you use a bed net?
34. Where did/can you buy a bed net? Be specific.
35. How much does one bed net cost? And insecticide?
36. What is an affordable price for a bed net? Insecticide?
37. Is it difficult to buy a bed net? Why?
38. How long does one bed net last?
39. Do you spray your net with insecticide? How often?
40. Is there anything you don't like about using a bed net? (appearance, inconvenience, local beliefs)

### ***Treatment***

41. When you get malaria, where do you go for treatment?
42. How long do you wait before going for treatment?
43. What makes it difficult to get malaria treatment?
44. What medicine do you usually take when you get malaria?
45. Are there side effects of malaria medications? Be specific.
46. Last time you had malaria, how much money did you spend on medicine? Doctor's visits?
47. How much do you worry about malaria?

## Appendix A3 – June 20-21, 2005 Malaika ITN Project Door-to-Door Survey

Aims: 1. To measure bed sizes in Nyamuswa;  
2. To estimate the burden of malaria and ITN use in a sample size of the population of Nyamuswa;  
3. To educate households about ITN use and malaria.

Method: Door-to door survey in a sample of 30 households in Nyamuswa village in the presence of a Village Health Worker and a translator and interpreter.

Script:

Hello,  
My name is Fyeka.  
This is Prisca, the Village Health Worker.  
This is Stephanie, a volunteer with Zinduka. She is conducting research on Malaria and has asked me to translate this survey into Kiswahili. She is a medical student working for Zinduka.

The purpose of the survey is to gather more information about how to improve the situation on Malaria in Nyamuswa. This information will hopefully benefit you and your community.

You are under no obligation to answer all of the questions. The information you give to us remains confidential and your name will not be included in the final report. This survey will take approximately 15 minutes.

For your time, we will be providing you with 500 Tsh. In order to get this compensation, you must complete the survey. At the end of these few questions, we would like to measure your beds to assess which size bednets would be most appropriate to introduce into Nyamuswa.

Do you agree to participate in this survey?

-----

Name \_\_\_\_\_

Sex \_\_\_\_\_

Age \_\_\_\_\_

1. Is anyone in this household currently suffering from Malaria?
2. What do you do when you or a member of your family is affected by malaria?
3. What do you do to prevent malaria?
4. Have you heard of NGAO?  
NGAO is what we call an insecticide. This is a product that kills mosquitoes, flies, bed lice and other nuisance insects.
5. What do you think is better: a normal bednet or an insecticide treated bednet?

You can buy bednets that are already treated, which you only need to retreat after a year with NGAO.

6. If Zinduka sold insecticide treated bednets cheaper than in shops at a price of between 2300 – 2500 Tsh instead of shop prices of around Tsh 3800, would you be interested in buying them?

7. Did you know that if everyone slept under a bednet that was treated with insecticide (at the factory or with NGAO) you could help to fight malaria by killing the mosquitoes that transmit the malaria parasite?

8. What is the best way of promoting the use of ITNs and educating people about NGAO treatment?

-----

Scientific studies are all showing that the number of children dying from malaria **AND FROM ALL OTHER CAUSES** can be reduced significantly if they sleep constantly under an insecticide treated bednet all year.

But *EVERYONE* must sleep under an insecticide treated bednet, not just the husband, the pregnant women or the young children, although pregnant women and children are most vulnerable.

Thank you.

## **Appendix A4 – Focus Group-2005 survey**

Focus Group:

Aim: To further understand the barriers to ITN use in Nyamuswa in different groups of people.

Method: 4 groups (10 men over 25, 10 women over 25, 10 men under 25, 10 women under 25). Each registered with their name and age. Each group completes the questionnaire separately in room 1. All groups are educated about bednet use for malaria prevention and Ngao treatment in room 2.

### **Questions:**

1. Do you have enough bednets for everyone in your household to sleep under?
2. What prevents everyone in your family from sleeping under a bednet?
3. In your opinion, who should use a bednet and why?
4. What do you estimate to be a fair price for a bednet already treated when you buy it (an insecticide treated bednet)? This price must be enough for you to value the product but not too much so that everyone can afford it.

**Appendix A5: Alex's Pre-sale Survey, 2005**

Do you agree to participate in this survey?

Name \_\_\_\_\_

Sex \_\_\_\_\_

Age \_\_\_\_\_

1. How many people are in your household, including all children?
2. How many of the children are under 5 years old?
3. How many people in your household sleep under a bednet every night?
4. Who sleeps under a bednet every night?
5. Are all of your bednets treated with NGAO? If , yes when was the last time you treated all of them?
6. When you are sleeping under the bednet are there holes that the mosquitos can get through?
7. Do you think that you need to replace your net? (If they had no nets, the question became “do you want to buy nets?”)
8. How much would you be able to afford for a bednet?

## Appendix A6: ITN Follow-Up Survey, Maria Keating (Feb 2006)

Hello, my name is \_\_\_\_\_. This is \_\_\_\_\_, a volunteer with Zinduka. We are conducting research about malaria. The purpose of this survey is to gather more information about the net(s) you bought from Zinduka in July 2005. We are planning another net sale in the months to come. The information from this survey will be very helpful to us. This survey will take approximately 15 minutes. For your time, we will be providing you with 500 TSh. Do you agree to participate in this survey?

- 1) Are you happy with your ITN?  
*Unafurahia na unapendelea chandarua chenye dawa (kilichotibiwa na dawa ya NGAO)?*
- 2) Did you have an ITN before?  
*Ulishawahi kuwa na chandarua kabla ya kununua hapa Zinduka?*
- 3) How many nights per week do you use the ITN during the rainy season? the dry season?  
*Ni siku ngapi kwa wiki unatumia chandarua chenye dawa kipindi cha masika? na kipindi cha kiangazi?*
- 4) Do you still have the net you bought from Zinduka?
  - 4a) If yes: Has it torn?
  - 4b) If no: Did you sell it?  
*Bado una chandarua ulichonunua kutoka Zinduka?*
  - 4a) *Kama ndiyo, kimechanika au kimechakaa?*
  - 4b) *Kama hapana, uliuzua?*
- 5) Have you retreated it with insecticide?  
*Je, unakitibu kwa dawa ya NGAO?*
- 6) How many children under five years old in your household?  
*Kuna watoto wangapi walio chini ya umri wa miaka mitano katika kaya yako?*
- 7) Who sleeps under a net in your household? Men, women, pregnant women, children, children under five? Who doesn't sleep under a net? Why not?  
*Nani wanalala kwenye vitanda vyenye vyandarua (wanaume, wanawake, wanawake wajawazito, watoto, watoto walio chini ya miaka mitano)? Akina nani hawalali kwenye vitanda vyenye vyandarua? Kwanini?*
- 8) Do you have enough nets for your entire household?  
*Una vyandarua vya kutosha kwa matumizi ya kaya yako?*
- 9) Are there holes in your nets?
  - 9a) Do you repair the holes?  
*Je, chandarua chako kina matundu?*
  - 9a) *Na kama kina matundu umekishona?*
- 10) Do you tuck your nets fully under the mattress?  
*Je unaweka vizuri chandarua chako kwenye godoro?*
- 11) Do you prefer round or square nets?
  - 11a) What size do you prefer?  
*Unapendelea chandarua cha duara au mraba?*
  - 11a) *Unapendelea chandarua cha ukubwa gani?*
- 12) How many people are in your household?
  - 12a) How many times have you had malaria this year?
  - 12b) How many times did you have malaria in 2005?
  - 12c) How many times did you have malaria in 2004?
  - 12d) How many times have the other members of your household had malaria this year?
  - 12e) How many times did other members of your household have malaria in 2005?
  - 12f) How many times did other members of your household have malaria in 2005?

*Kuna watu wangapi katika kaya yako?*

*12a) Ni mara ngapi umeugua malaria kwa mwaka huu?*

*12b) Ni mara ngapi umeugua malaria kwa mwaka ya 2005?*

*12c) Ni mara ngapi umeugua malaria kwa mwaka ya 2004?*

*12d) Ni mara ngapi wanafamilia yako wameugua malaria kwa mwaka huu?*

*12e) Ni mara ngapi wanafamilia yako wameugua malaria kwa mwaka ya 2005?*

*12f) Ni mara ngapi wanafamilia yako wameugua malaria kwa mwaka ya 2004?*

- 13) Do you think people may sell their ITNs because they could make a profit since Zinduka is selling them at a low price? If this occurs, the ITN project will end so please inform Zinduka if you suspect someone has or is selling their ITNs.

*Unafikiri kwamba watu wanaweza kuuza vyandarua hivi kwa sababu wanataka kupata faida kipindi Zinduka inapouza vyandarua hivi kwa bei ya chini? Na kama ikitokea watu wanauza vyandarua kwa biashara nakupata faidi, mradi utasimamishwa. Tafadhali toa taarifa Zinduka endapo utamwona mtu yeyote akiuza vyandarua hivi kwa bei ya juu.*

- 14) Suggestions made by the survey respondents.

In order to prevent malaria, everyone in your household must sleep under an insecticide treated bednet every night, not just the husband, the pregnant women, or the young children, although pregnant women and children are most vulnerable. Your bednets should be treated with NGAO after four washings or once a year. You should use your bednets all year long, even during the dry season. Thank you for your time!

## **Appendix B1-Malaria Education tips**

### **Malaria:**

- Malaria is a global emergency. Nearly all cases (90%) are in Sub-Saharan Africa.
- 1 child dies of malaria every 30 seconds.
- Encourage parents to educate children
- Teach signs and symptoms of malaria
- Promote early intervention, blood tests at the clinic for proper diagnosis, and follow prescribed drug regimens.
- One mosquito can cause malaria, even in dry season.
- It is both *preventable* and *curable*
  - best means of prevention is the use of ITNs which reduce malaria-related mortality by 20%
  - best means of curing is with timely healthcare, this is most important for pregnant women and children under the age of 5 who are at most risk, look for the signs of malaria: fever, diarrhea, and vomiting

### **Malaria in Nyamuswa:**

- malaria is the main cause of morbidity and mortality
- at Ikizu clinic, malaria is the most common cause of illness for both children and adults; in 2005, there were 5708 malaria cases at the clinic
- although there are less malaria cases at Ikizu clinic during the dry season, there are still hundreds of cases!
- very few people sleep under a net (approximately <10%) and even less sleep under an ITN; the largest barrier to using a net is lack of money!

### **Malaria Facts:**

- it is caused by a single-celled parasite; there are four types of malaria parasites:
  - Plasmodium vivax
  - Plasmodium ovale
  - Plasmodium malariae
  - Plasmodium falciparum → this is the most deadly of the parasites; it is found in Tanzania!
- the parasites use mosquitoes as their vector; the parasites are transferred to humans through the bite of an infected mosquito
- without proper treatment, malaria can proceed to a more severe stage which may include cerebral malaria, jaundice, reduced consciousness, and coma

\*\* drew a picture to depict the “malaria cycle,” first there is a parasite and then a mosquito containing a parasite and then a person being bit by the mosquito and then a person sick with malaria; from the last picture of the sick person there are two arrows to indicate the possible outcomes of malaria, one points to a grave (death!) and another points to a healthy person

### **Preventing Malaria:**

- (1) Reduce numbers of mosquitoes:
  - a. fill depressions that collect water
  - b. drain swamps
  - c. ditch marshy areas to remove standing water
  - d. educate people to remove or cover standing water in cans, cups, and rain barrels

- (2) Kill infected mosquitoes to end the life cycle of the parasite
  - a. ITNs kill mosquitoes and other insects
  - b. ITNs repel mosquitoes so that less enter the house
  - c. With high community coverage, ITNs will reduce the number and life span of mosquitoes

\*\* drew two pictures to illustrate how ITNs end the life cycle of the parasite and prevent the spread of malaria; one picture was a house containing two beds: one bed without a net and one bed with a regular bednet, the other picture was a house containing two beds: one bed without a net and one bed with an ITN; I showed how the ITN kills the mosquitoes that come into contact with it thereby preventing those mosquitoes from biting the person sleeping without a net; this, of course, is not true in the house with the regular bednet where the mosquitoes are not killed or repelled by the net and therefore are free to bite the person sleeping unprotected

### ITNs

- ITN use is a cheaper, safer, and simpler option than contracting malaria, paying for treatments, and facing the health risks of severe malaria and admission to a hospital
- ITNs are treated with *pyrethoid insecticide* which is:
  - specially approved for use on bednets
  - not toxic to mammals BUT toxic to insects, even at low doses
  - long-lasting (if you avoid frequent washing and exposure to the sun, both of which will hasten the break down of the insecticide)
- Review how to hang nets, tuck nets under the mattress, repair holes, wash nets, and retreat nets with insecticide.
- People complain that nets are too hot, but having a fever from malaria is worse, isn't it? Often people only use nets during the rainy season when there are the most mosquitoes. But mosquitoes are around ALL YEAR in Nyamuswa. You must sleep under an ITN EVERY NIGHT.
- Everyone must sleep under a net so that the malaria parasite cycle is broken, not just pregnant women and children although they are most vulnerable.

### **Retreatment with insecticide (NGAO):**

- The nets MUST be treated with insecticide to kill mosquitoes directly which will break the life cycle of the malaria parasite.
- Non-treated nets are no-where near as good.
- Retreat every 6-12 months or after every 4 washings
- Retreat with a mix of water and NGAO
- Allow the net to dry in a shady place

### **Key Messages to the Community:**

- it is worth saving money for the purchase of an ITN; ultimately your family will save money on doctor visits and medicine since you should have less malaria cases if you use an ITN
- extra benefit of an insecticide treated net versus a regular bednet: it ends the life cycle of the parasite which prevents the further spread of malaria in the community!
- importance of timely healthcare when one suspects malaria, especially in pregnant women and children under the age of 5
- need to re-treat your ITN so that it stays effective: SAVE A SODA, BUY NGAO!! (both soda and a re-treatment packet of NGAO cost 300 TSh!!)

- Zinduka is working on a programme for you to buy nets that are already treated at a reduced price. Zinduka will not make a profit, all the money collected will be spent on more ITNs so that eventually all of Nyamuswa sleeps under an ITN. Would you be willing to buy an ITN from Zinduka if this programme took place?(This question is only being asked to know if it is worth starting up this project, to obtain information).

Sources: Center for Disease Control  
Malaika Project Research

[I conveyed this information to both the Nyamuswa Drama Group members and Ikizu health workers in education sessions which I organized through NDG member, Aloyce Bwire, and Dr. Mbonamengi at Ikizu clinic; the Ikizu clinic has a weekly educational workshop and they are very open to having Malaika Project volunteers speak to them during that time. Both sessions went really, really well and were probably the best things that I did while I was in Nyamuswa. Both groups had many questions for me and they learned new information!]

## **Appendix B2: Volunteer's survey results 2005-2006**

### **Alex's Results from Summer 2005**

#### Summary of Survey Results:

A total of 50 households were interviewed, which included 293 people.

- 42/50 participants were female.
- Ages of participants ranged from 18 to 79, with an average age of 39.
- 66/293 were children under 5.
- 129/293, or 44% of people slept under a bednet each night. This does not include the family that reported only sleeping under nets during the wet season.
- 16/50 households had no bednets.
- 16/50 households had enough bednets to cover every member of the family.

34 Households had at least one bednet.

- 17/66 children under 5 slept under a bednet.
- 17/34 households (50%) with at least one net reported that at least one net had holes in it (often this was reported as all the nets had holes in them).
- 20/34 households with at least one net reported that they need to replace their nets (if the nets had no holes, the reason given was that they were too old or worn)
- 16/34 households with at least one bednet used NGAO to treat their nets.

46/50 Households were interested in purchasing nets, either to replace the nets they had or to increase the coverage among family members.

- 16/46 households reported a price of 1500 TSh that would be affordable.
- 14/46 households reported a price of 1000 TSh that would be affordable.
- 8/46 households reported a price of 2000 TSh or greater. All of these households, when informed of Zinduka's price, were interested in purchasing nets.
- 5/46 households reported a price of 500, and 2/46 reported that they would not be able to purchase nets at any price.
- Many of the households that reported 1500 TSh were asked if they could afford 2000 TSh, the price at Zinduka. Many reported that they would be able to purchase nets at this price, and some reported that they would only be able to afford one net, when they needed more.

#### Analysis:

The purpose of this survey was to determine a rough idea of bednet usage among adults and children under 5, as well as to assess the condition of the bednets and whether they were treated. Less than half of the people surveyed slept under a net, and less than half of the households treated their nets. Only 25% of children under 5 slept under a bednet. Most (59%) of households with at least one net reported that their nets needed to be replaced.

The second goal of this survey was to approximate an accessible cost to families to purchase a net. Most households reported a price of 1000 or 1500 TSh which was affordable to them.

The third goal of this survey was to educate people about using bednets each night, treating their bednets with NGAO, and replacing nets that have holes. We also told people of the ITN project at Zinduka to increase interest in purchasing bednets at lower prices.

In the future, the hope is that this survey will be useful to determine the effectiveness of the Malaika ITN project in increasing bednet usage in Nyamuswa.

### **Kinna's results from January 2006**

23 6 X 6 nets were sold on the first day—larger nets were in higher demand. Of the 23 ppl asked who doesn't use a net/how many kids under 5 in household, 12/23 stated that the kids under 5 don't use ITN's. 14/42 stated their net(s) were torn. All participants who owned nets previously (40/42) felt the ITN's did help to prevent malaria. 3/42 participants stated they hadn't bought ITN's before because they felt the bednets were too expensive. 12/42 participants stated that the ITN's purchased/received through donation were to be used by the children in their household. 8/42 participants stated they had not used NGAO before, mostly because it was too expensive—one participant stated that NGAO made her cough therefore she discontinued its use. All 42/42 participants that they would use NGAO with the ITN's.

Based on the data, it seems that more people are buying the 6 X 6 nets. While most people believe that the ITN's help prevent malaria, the cost of the ITN's, particularly the NGAO, is one of the main reasons why they haven't purchased nets. More emphasis should be placed on purchasing ITN's for children, especially those who are under the age of 5. In addition, efforts to sell discounted ITN's to members of the Nyamuswa should continue.

### **Maria's notes on ITN sales, retreatment day, education (March 2006)**

#### *Net Delivery:*

##### A-Z Factory ITN Prices:

ITN – blue, square, 4x6x7 ft: 2800 TSh

ITN – blue, round, 3.5x6x7 ft: 2650 TSh

- unable to deliver for free to Nyamuswa, delivery trucks no longer pass through Nyamuswa
- if Zinduka picks up nets from the factory in Arusha then they will receive a 100 TSh discount per net reducing the prices of square and round nets to 2700 TSh and 2550 TSh, respectively
- nets are sold in both Musoma and Mwanza but not at factory prices
- cost analysis needs to be done in order to determine the cheapest means of getting a bulk net shipment to Nyamuswa via Musoma, Mwanza or Arusha

#### *Net Preferences:*

- all ten respondents to the ITN Follow-Up Survey (conducted on February 28<sup>th</sup> and March 1<sup>st</sup>, 2006, see results in attached document) indicated a preference for square nets
- Ikizu health workers expressed a preference for large and medium nets only because they said that the small nets do not fit properly on beds
- Ikizu health workers also said that round nets must have enough material at the top so that they can be properly tucked (duara kwa mikunjo juu ya chandarua)

#### *Net Sales:*

- Nyamuswa Drama Group is willing to help with net sales and malaria education; they expressed the need for a daily stipend if they spend an entire day selling in Nyamuswa or surrounding villages
- Ikizu clinic is willing to advertise for Zinduka's ITN sales at the clinic as well as to continue educating its patients about malaria and the benefits of an ITN

- Following discussion with Malaria Project Coordinator, Muse, the following was suggested:
  - Net sales should be centered at the Zinduka office and run by Zinduka members, Nyamuswa Drama Group, and Malaika Project volunteers
  - Net sales can be advertised by hanging posters throughout Nyamuswa as well as by making announcements at schools and churches
  - Door-to-door sales should be done when possible; since such sales are labor intensive, it would be best to designate one day each month for door-to-door selling
  - Net sales cannot be limited to Nyamuswa village because people from surrounding villages often come to Nyamuswa during the week and they will want to buy nets as well

*Malaria Education:*

- One day training workshop could be organized for the following:
  - Nyamuswa Drama Group\*
  - Zinduka board members
  - Ikizu health workers\*
  - Village health workers
- Such a training could cover basic topics surrounding malaria, emphasizing the importance of using insecticide-treated nets and how to treat and re-treat with NGAO
- Community Malaria day could be organized in order to increase the community's knowledge of malaria and related issues; this could be set up along a one kilometer stretch of road which would be lined with various stations, each one emphasizing a different issue related to malaria using skits, songs, speakers, etc. to increase awareness of malaria in the Nyamuswa area; of course, this would also be a great vehicle for ITN sales!

\* Note: I already met with both the Nyamuswa Drama Group and Ikizu health workers, on separate occasions, to educate them further about malaria; the information which I taught is outlined in another document

## **Maelezo Kuhusu Chandarua**

### *Bednet Information Sheet*

**1. Kila mmoja anapaswa kulala kwenye kitanda chenye chandarua, kila usiku, ili kujikinga na mbu waenezao Malaria.**

*Everyone should sleep under a bednet every night to prevent Malaria, in the dry season and the rainy season.*

**2. Chandarua hiki kimewekewa dawa ya NGAO.**

*This bednet has already been treated with NGAO.*

**3. Kama ukifua chandarua chako mara 4 (nne) unatakina uchanganye tena na dawa ya NGAO.**

*If you wash your bednet 4 times you need to retreat the bednet with NGAO.*

**4. Kama hutafua chandarua chako mara kwa mara unapaswa uchanganye dawa walao mara moja kwa Mwaka.**

*If you do not wash you bednet often you need to retreat it once a year.*

**5. Kama chandarua chako kina matundu una takiwa kushona matundu hayo, kama matundu ni makubwa sana yasiyoweza kushoneka, au kama chandarua chako kina matundu mengi unatakiwa ununue kipya.**

*If your bednet has holes you should patch the holes. If the holes are too big to patch, or if your net has many holes you should buy another one.*

**6. To use the net, hang it from the ceiling, let it fall around your bed or mattress. Tuck the bednet under your mattress, so that no holes or openings allow mosquitoes to enter. Do not let your skin touch the bednet while you sleep, because mosquitoes can bite your skin through the net.**

**7. If you are not using the net, tie it up so that no mosquitoes go inside in the daytime.**

**ILI KUZUIA UGONJWA  
HATARI WA MALARIA  
VYANDARUA VILIVYO NA  
DAWA YA NGAO  
VINAPATIKANA ZINDUKA**

**KWA BEI NAFUU:**

**SH 2000\=**

**NUNUA CHANDARUA NA  
UKITIE DAWA YA NGAO  
KWA AFYA YA FAMILIA  
YAKO.**

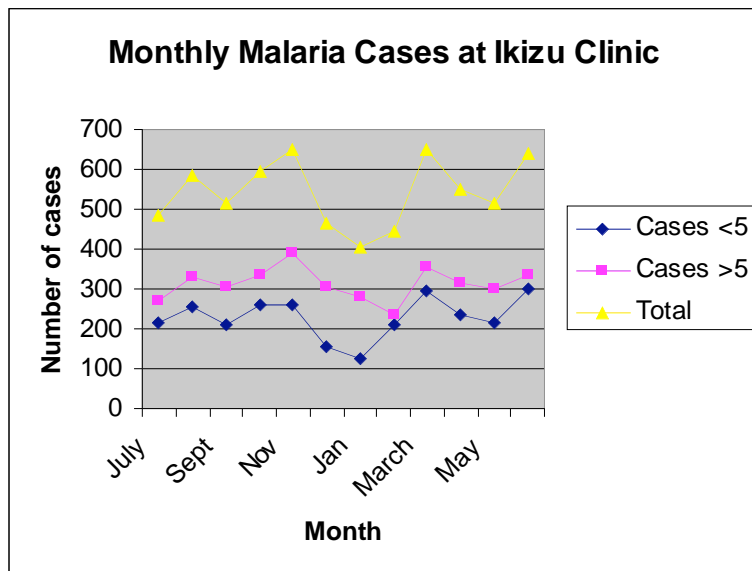
**UONGOZI ZINDUKA**

## Appendix C

Table C1

Ikizu Health Center 2003-4 MALARIA STATISTICS				
	Cases <5	Cases >5	Total	Deaths
July	215	272	487	2
Aug	257	329	586	2
Sept	208	307	515	2
Oct	258	336	594	0
Nov	260	390	650	1
Dec	157	306	463	2
Jan	126	281	407	3
Feb	210	236	446	4
March	295	355	650	3
Apr	234	315	549	4
May	215	299	514	2
June	302	337	639	4
AVERAGE	228.08	313.58	541.67	2.42
TOTAL	2737	3763	6500	29

Table C2



Appendix C

Graph C3

Table C3

Malaria Prevention Technique		
	% participants	
Malaria Prevention Technique	Mentioned	Used
Bed nets	96.70%	80.60%
Clean environment	22.50%	19.40%
Antimalarial medicines	12.90%	6.50%
Insect repellent coils	3.20%	3.20%
Used nothing		19.40%

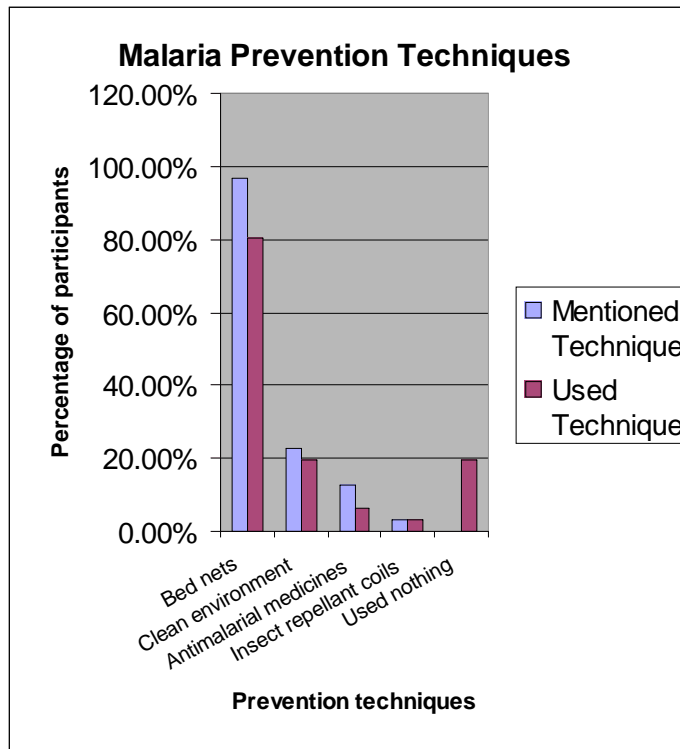
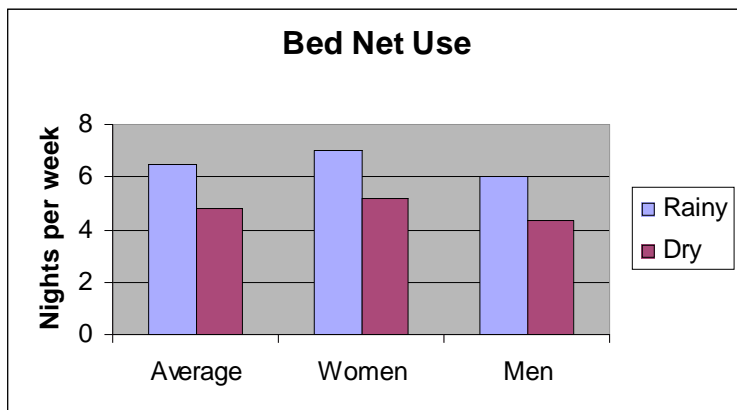


Table C4

Nights of Bed Net Use Per Week		
	Rainy	Dry
Average	6.5	4.79
Women	7	5.21
Men	6	4.36

Graph C4



**Appendix D-Sample malaria volunteer daily schedule. –Kinna 2006**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Meet with Zinduka Board members, Ward education officer and NDG- Arrange schedule of primary school afterschool events	Visit Ikizu clinic to find out more about the local malaria situation in Nyamuswa  Makongoro Secondary School regarding setting up a peer education group (talk to Muse)	Survey of families who bought ITN from Zinduka last summer  Work with NDG and Makongoro Secondary School re: peer education	Survey to determine what kind of nets people need (round vs. square, what size)	Organize survey results in preparation for weekend	Mwanza for the weekend – Find cheaper ITN donors who still sell good quality bednets.	Mwanza for the weekend
Sell ITN's door-to-door  Work with NDG and Makongoro Secondary School re: peer education	Sell ITN's door-to-door  Afterschool events with NDG	Sell ITN's door-to-door  Work with NDG and Makongoro Secondary School re: peer education	Sell ITN's door-to-door  Afterschool events with NDG	Send report to group about #ITN's bought/sold and how much \$ collected, as well as how much is left in revolving fund	Musoma for the weekend	Musoma for the weekend
Plan a drama group play at market day (Sunday) or separately have NDG perform a play for only Nyamuswans	Prepare for NDG performance (flyers, questions/prizes for audience, etc.)  Afterschool events with NDG	Prepare for NDG performance (flyers, questions/prizes for audience, etc.)  Afterschool events with NDG	Teach Drama Group English  Work on peer ed at Makongoro Secondary School	Mwanza	Mwanza – send weekly report to group	Market Day – NDG performance
Volunteer at Ikuzu health clinic, Bunda Day School  Work with NDG and Makongoro Secondary School re: peer education	Volunteer at Ikuzu health clinic, Bunda Day School  Afterschool events with NDG	Volunteer at Ikuzu health clinic or Bunda Day School  Afterschool events with NDG	Volunteer at Ikuzu health clinic or Bunda Day School  Work on peer ed at Makongoro Secondary School	Volunteer at Ikuzu health clinic or Bunda Day school	Mwanza – send weekly report to group	Mwanza for weekend