

# Episcopal Relief & Development

*Netsforlife*® Phase II Final Evaluation

June 2013

## Summary

---

Malaria is a preventable and curable disease yet its devastating effects continue to make Africa poor as it kills thousands of children under fives and pregnant women. In 2012, the World Malaria report recorded an estimated 660,000 deaths due to malaria. It is estimated that in every 60 seconds, a child dies out of malaria. Between 2000 and 2010, malaria mortality rates fell by 26% around the world due to massive financial and political support malaria did receive. These efforts need to be sustained and if possible increased in order to meet the MDG targets.

*Netsforlife*® is a partnership for malaria prevention in 17 African countries. *Netsforlife*® Phase II which started in October 2008 had the mandate to deliver 7 million LLIN through its unique method of mobilizing communities to take active leadership in controlling malaria. Families and individuals are equipped with adequate knowledge on malaria prevention and use of LLIN. Continuous monitoring and participatory SBCC activities help to instill a ‘net culture’ among project participants.

Independent consultants were hired in 16 out of the 17 African countries and conducted final assessment on program performance. The consultants were provided with generic questionnaire that addresses *Netsforlife*® selected indicators and the choice of sampling methodology was either LQAS or cluster sampling with probability proportionate to size of the communities. This report is a compilation of all final evaluation reports received from partners.

During the second phase of *Netsforlife*®, the project distributed and hanged 9,584,034 LLINs, trained 81,435 malaria control agents (MCA) and reached out to over 28 million people through various SBCC activities.

*Netsforlife*® intervention ensured adequate protection of the entire family against mosquito bites. Net ownership rose from an average baseline value of 8.42% to 85.3% in 2011 and declined to 68.19% in 2012 due to inadequate nets to replace worn-out nets. Democratic Republic of Congo recorded the highest coverage of 98.6% as at 2012. Proportion of pregnant women who slept under LLIN the previous night moved from a baseline value of 16.9% to 84.2% in 2011 and a slight decline to 78.5% in 2012. LLIN usage for children under five also recorded a baseline

figure of 15.6% and had an exponential increase to 89.4% in 2010, a marginal decline to 83.2% in 2011 and finally to 79.1% in 2012. The decline in net possession due to lack of nets for replacement did have consequential effect on total net usage.

*Netsforlife*® has reached out to the unreached by the central healthcare system. It has brought life and renewed hope for individuals and families. Lives are being saved and school going children are able to attend to school regularly. Parents and guardians have the strength and needed energy to work and generate income for their families. In order to maintain the gains in malaria prevention, there is the need to embark on continuous nets replacement exercise to ensure high LLIN coverage and usage. Untimely replacement of mosquito nets may have the undesirable consequence of eroding the achievements made under *Netsforlife*® phase II.

# Content

---

Summary.....	2
Acronyms .....	5
List of Figures .....	6
Background.....	8
Recommended Malaria Intervention Strategies.....	8
Global Malaria Intervention.....	9
Introducing <i>Netsforlife</i> ®.....	10
Program Implementation Strategy .....	10
Purpose of Phase II Final Evaluation .....	11
Methodology .....	11
Direct Output Results.....	13
Direct Output Results.....	13
Final Evaluation Results .....	15
LLIN Ownership.....	15
LLIN Usage .....	18
LLIN usage amongst pregnant women .....	19
LLIN usage amongst children under five years .....	20
Knowledge.....	24
Discussion.....	33
Conclusion .....	38
Recommendations.....	38
Story of Change.....	40
APPENDIX 1.....	50

## Acronyms

---

ACT	Artemisinin-based Combination Therapy
ADDRO	Anglican Diocesan Development and Relief Organization
AIDS	Acquired Immune Deficiency Syndrome
AMFm	Affordable Medicines Facility – malaria
DOT	Directly Observed Treatment
IRS	Indoor Residual Spraying
LLIN	Long Lasting Insecticidal Net
LQAS	Lot Quality Assurance Sampling
MCA	Malaria Control Agent
MDG	Millennium Development Goal
M&E	Monitoring and Evaluation
NMCP	National Malaria Control Program
RBM	Roll Back Malaria
RDT	Rapid Diagnostic Test
SBCC	Social and Behavior Change Communication
SP	Sulphadoxine Pyrimethamine
WHO	World Health Organization

## List of Figures

Figure 1: Nets distributed per community in Phase II

Figure 2: Proportion of households with at least two LLINs

Figure 3: Average LLIN ownership by all age groups and vulnerable groups

Figure 4: Trend Analysis of proportion of households with at least two LLINs

Figure 5: Trend analysis of population of households with at least two LLINs

Figure 6: Trend analysis of pregnant women who slept under LLIN the previous night

Figure 7: Trend Analysis of pregnant women who slept under LLIN the previous night

Figure 8: Trend Analysis of Children under five years who slept under LLIN the previous night

Figure 9: Trend Analysis of Children under five years who slept under LLIN the previous night

Figure 10: Proportion of target audience who know/believe mosquitoes transmit malaria

Figure 11: Proportion of target audience who know/believe malaria is serious, can be fatal

Figure 12: Proportion of target audience who know pregnant women and children under five years are most vulnerable

Figure 13: Proportion of target audience who know four cardinal signs/symptoms of mild/uncomplicated malaria

Figure 14: Proportion of target audience who know where mosquitoes breed

Figure 15: Proportion of target audience who know there is an effective treatment for malaria

Figure 16: Proportion of target population/caregivers who know the recommended medicine/drug for treating malaria

Figure 17: Proportion of women who received two or more doses of IPTp during their last pregnancy in the last two years.

Figure 18: LLINs distributed in Phase II

Figure 19: MCAs trained in Phase II

Figure 20: People sensitized in Phase II

Figure 21: Proportion of households with at least two LLINs versus LLIN use by population of all ages

## **Background**

Malaria is a preventable and treatable mosquito-borne disease yet one of the leading causes of morbidity and mortality worldwide. Globally, it is estimated that about 3.3 billion people are at risk of malaria every year. According to WHO World Malaria Report (2012), there were about 219 million cases of malaria in 2010 and an estimated 660,000 deaths. Africa is the most affected continent: about 90% of all malaria death occurs in sub-Saharan Africa with children under 5 years and pregnant women being victims most at risk.

Between 2000 and 2010, malaria mortality rates fell by 26% around the world. In Africa region, the decrease was 33%. During this period, it is estimated that 1.1 million malaria deaths were averted globally as a result of recent scale-up interventions.

In terms of disease burden malaria remains inextricably linked with poverty. The highest malaria mortality rates are being seen in countries that have the highest rates of extreme poverty (proportion of population living on less than US\$ 1.25 per day). International targets for reducing malaria cases and deaths will not be attained unless considerable progress can be made in the 17 most affected countries, which account for an estimated 80% of malaria cases (World Malaria Report, 2012). The six highest burden countries in the African region (in order of estimated number of cases) are: Nigeria, Democratic Republic of the Congo, United Republic of Tanzania, Uganda, Mozambique and Cote d'Ivoire. These six countries account for an estimated 103 million (or 47%) of malaria cases.

About 50 countries are on track to reduce their malaria case incidence rates by 75%, in line with World Health Assembly and Roll Back Malaria targets for 2015. These 50 countries only account for 3% (7 million) of the total estimated malaria cases.

## **Recommended Malaria Intervention Strategies**

In order to combat the menace of malaria globally, the WHO and RBM has recommended a number strategies. The strategies include the prevention of malaria using LLINs as the main strategy and supported with Indoor Residual Spraying (IRS). Due to increasing reported case of drug resistance to malaria treatment, artemisinin-based combination therapies (ACTs) has been recommended for treating malaria in endemic countries. ACTs are recommended as the first-line

treatment for malaria caused by *Plasmodium falciparum*, the most deadly *Plasmodium* species that infects humans. It is also recommended that the treatment of reported malaria cases should be confirmed with either rapid diagnostic test (RDT) or laboratory chemical analysis before treatment commences as almost every fever is reported as malaria. Malaria in pregnancy has been one of the main intervention strategies using the SP drug and the method of administration to pregnant women has been the direct observatory therapy (DOT) method.

## **Global Malaria Intervention**

According to WHO and RBM estimation, to achieve universal access to long-lasting insecticidal nets (LLINs), 780 million people at risk would need to have access to LLINs in sub-Saharan Africa, and approximately 150 million bed nets would need to be delivered each year. The number of LLINs delivered to endemic countries in sub-Saharan Africa dropped from a peak of 145 million in 2010 to an estimated 66 million in 2012. This will not be enough to fully replace the LLINs delivered 3 years earlier, indicating that total bed net coverage will decrease unless there is a massive scale-up in 2013. A decrease in LLIN coverage is likely to lead to major resurgences in the disease.

In 2011, 153 million people were protected by indoor residual spraying (IRS) around the world, or 5% of the total global population at risk. In the WHO African Region, 77 million people, or 11% of the population at risk were protected through IRS in 2011.

The number of rapid diagnostic tests delivered to endemic countries increased dramatically from 88 million in 2010 to 155 million in 2011. This was complemented by a significant improvement in the quality of tests over time.

In 2011, 278 million courses of Artemisinin-based combination therapies (ACTs) were procured by the public and private sectors in endemic countries – up from 182 million in 2010, and just 11 million in 2005. This increase was largely driven by the scale-up of subsidized ACTs in the private sector through the AMFm initiative, managed by the Global Fund to Fight AIDS, Tuberculosis and Malaria

## **Introducing *Netsforlife*®**

*Netsforlife*® is a partnership for malaria prevention in 17 African countries. Episcopal Relief & Development and its donor partnership with Coca-Cola African Foundation, Standard Chartered Bank, Chris Flowers Foundation, Starr Foundation and ExxonMobil together with its implementing partners (Anglican Church) are using a unique methodology to prevent malaria in selected communities in 17 African countries. The program seeks to motivate communities and families, equip them with knowledge and LLIN and instill a net-culture through continuous monitoring and social behavior change communication (SBCC) strategies. Phase II of *Netsforlife*® began in October 2008 with the aim of distributing 7 million nets in 17 African countries within 5 years. The program also had the target of reaching out to 19.6 million people through 62,000 trained Malaria Control Agents (MCA). Phase II began after a successful completion of Phase I which chalked an impressive distribution of 1.5 million LLINs.

## **Program Implementation Strategy**

The *Netsforlife*® implementing methodology begins with discussions with the national malaria program office on malaria situation in the specified country and selection of communities that are normally not reached by the present health facilities. This is followed by engaging the community leadership in a process of getting their involvement in the program designing and implementation. Community leadership engagement is then followed by selection of community volunteers to be trained as advocates for malaria prevention in their respective communities. A knowledge, practice and coverage (KPC) baseline assessment is conducted to present the true situation before project implementation. The baseline information is also shared with community members.

As part of equipping families and individuals in preventing malaria, LLIN distribution is done at the community level. The distribution is done by house-to-house and these nets are hanged at their sleeping places. In situations where the NMCP leadership prefers point distribution methodology in communities, the distribution is followed immediately by volunteers who make sure all these nets are hanged properly at their sleeping places. The mosquito bed nets distribution is preceded by household registration.

Continuous monitoring and house-to-house education helps to instill a net culture. Mosquito bed nets at the household level are followed by volunteers for at least 18 months. The house-to-house education is also supported by other community SBCC activities such as community dramas, radio talk shows, durbars etc.

## **Purpose of Phase II Final Evaluation**

The purpose of this evaluation is to assess the extent to which the program has performed in each of the implementing countries having achieved the direct outputs of the program. The overall goal is to contribute to the reduction of malaria burden among families by instilling a net-culture. The achievements of this program will be first and foremost matched with the expected direct outcome indicators related to knowledge on malaria prevention and LLIN coverage (ownership and usage) as well as other attributes related to malaria prevention in a community setting. Variables included in this evaluation include household LLIN ownership and usage, pregnant women LLIN ownership and usage, children under five years' owners and usage. Others are knowledge on cause of malaria and various prevention options available to individuals and families.

## **Methodology**

The final evaluation was successfully conducted in 16 out of the 17 participating countries involved in *Netsforlife*® community malaria prevention program. Namibia could not submit final report or update us with final outcome information. The absence of final Namibia evaluation report does not significantly change the overall analysis of data from partners as Namibia contribution in relation to total net distributed is 0.86%. However, Namibia output values were included in the analyzing total direct phase II outputs as periodic quarterly reports were available.

In each country, independent consulting teams were identified and hired to undertake the assessment (Appendix 1 – List of Independent consultants). The consultants were guided by a scope of work, *Netsforlife*® generic questionnaire, *Netsforlife*® outcome indicators and a preferred method of sampling respondents. The sampling methodology options were either LQAS methodology or use of cluster sampling with probability proportionate to size of the

communities. In a couple of countries, consultants went further to include some qualitative assessment methods to gather more community information.

In each country, consultants reported putting in specified measures in selecting and training field enumerators. Questionnaires were customized to local environmental settings and pre-tested. Ethical clearances were considered and respondents' consents were requested before interviews began. Respondents were also assured of confidential clause for information provided. Consultants were made responsible to ensure data quality and integrity during data collection and entry. Draft reports from all countries were reviewed by partner program team as well as M&E team in Episcopal Relief & Development.

The final evaluation was done at varied times for different implementation partners as implementing partners had slightly different time frame for program roll-out.

## Direct Output Results

*Netsforlife*® achieved its target of distributing 7 million LLINs, training 62,000 Malaria Agents and reaching out to over 19 million people in December of 2011. At the end of Q4 of 2012, a total of **9,584,034** LLINs had been distributed, **81,435** Malaria Control Agents (MCAs) trained to sensitize community members and monitor net usage at the household level and **28,404,02** individuals reached with malaria messages.

Table 1: *NetsforLife*® Phase II Achievements as at end of Q4, 2012

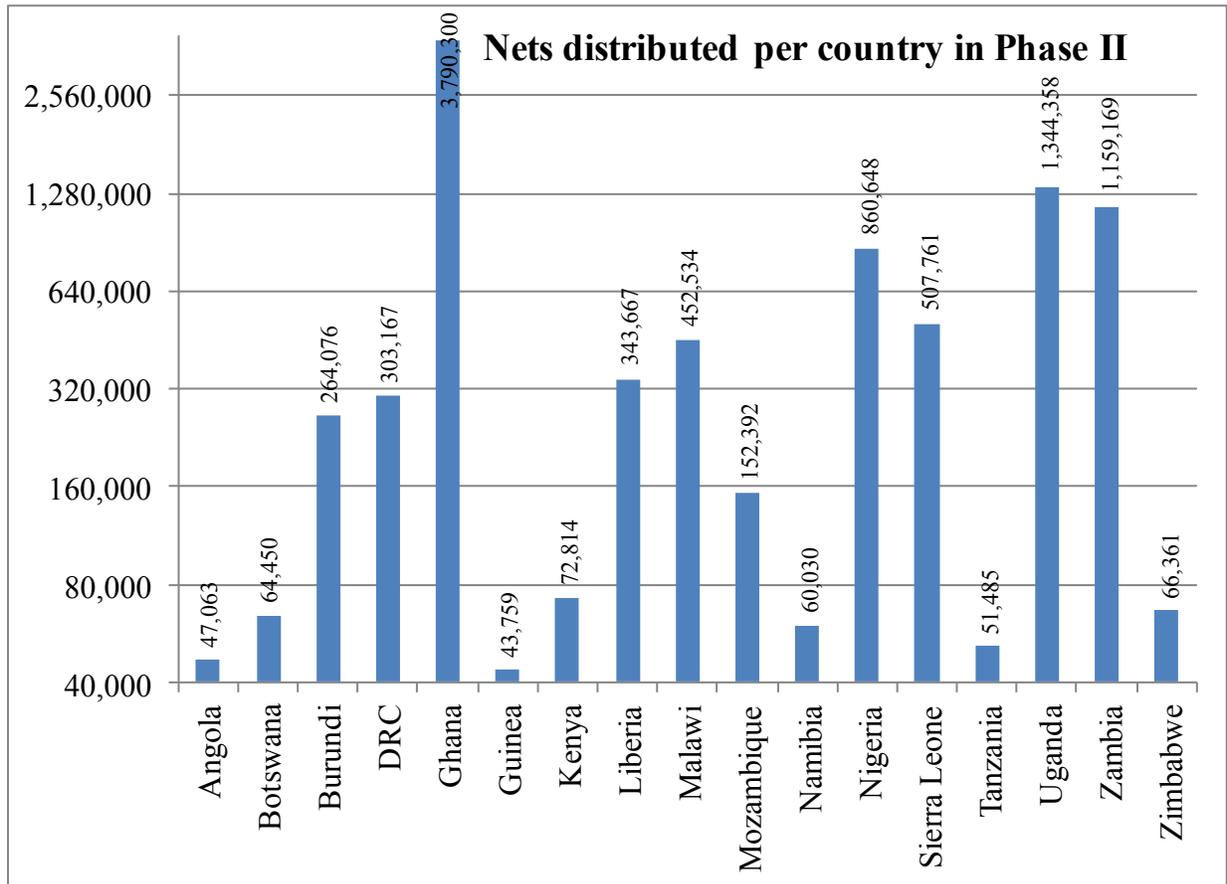
Output Indicators	Target	Achievement	% Achieved
Number of LLINs distributed	7,000,000	9,584,034	136.91
Number of Malaria Agents trained	62,222	81,435	130.88
Number of people reached with malaria messages	19,600,000	28,404,002	144.92

Source: *Netsforlife*® Monitoring Database

### ▪ LLIN Distribution

During the Phase II period, 12 out of the 17 implementing partners (Angola, Burundi, DR Congo, Ghana, Liberia, Malawi, Mozambique, Namibia, Nigeria, Sierra Leone, Uganda and Zambia) were extremely successful in acquiring LLINs from their National Malaria Control Programs and other organizations for onward distribution and hang-up. The Ghana program, implemented by Anglican Diocesan Development and Relief Organization (ADDRO), distributed and handed the highest number of nets; **3,790,300** representing **54.15%** of the total **9,584,034** LLINs distributed. Zambia and Uganda both distributed over a million nets while Nigeria and Sierra Leone distributed over 500,000 nets. Angola, Botswana, Guinea, Kenya, Namibia, Tanzania and Zimbabwe distributed below 100,000 nets.

Figure 1



- **Training of Malaria Agents**

A total of **81,435** Malaria Agents were trained during the period to sensitize community members on malaria prevention and to monitor LLIN usage by beneficiaries at the household level. *Netsforlife*® Ghana recorded the highest number of volunteers trained which represents **37.66%** of total volunteers trained.

- **People sensitized/reached with malaria messages**

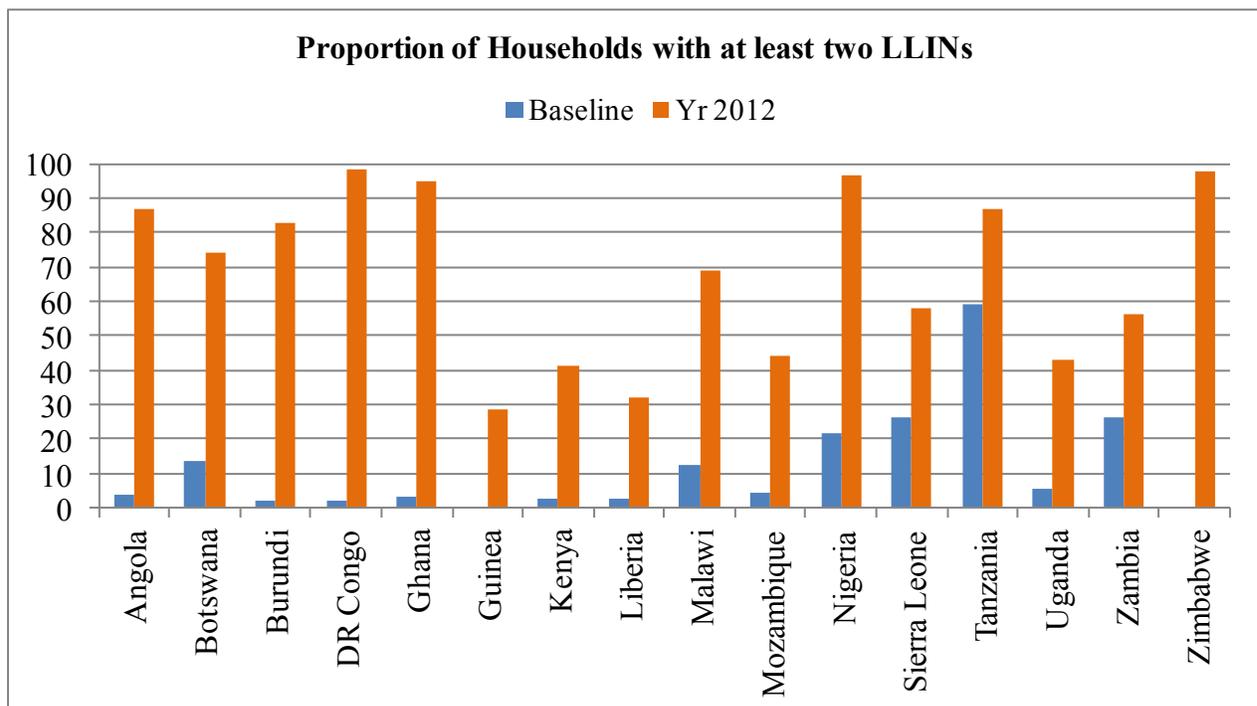
A total of **28,404,002** individuals were reached with malaria messages. Various strategies ranging from one-on-one education by MCAs at the household level, education in schools, churches, mosques, and community activities such as dramas during local events were employed.

## Final Evaluation Results

### LLIN Ownership

Long Lasting Insecticidal Nets are one of the most efficient and cost effective tool for malaria prevention. Thus the *Netsforlife*® program focused on LLIN distribution initially to vulnerable groups and later extended this to the general population, in response to RBM’s recommendation. At baseline, an average of almost 1 out of every 10 households owned at least two LLINs. Due to the unique strategy and methodology of the program, net possession increased substantially across the countries from an average baseline value of 8.42% to about 68.19% in 2012. Exponential increment was observed in almost half of the countries in the end of Phase II evaluation as per Figure 2 below. DR Congo recorded the highest value (98.6%) for households with at least two LLINs, a substantive increase from a baseline value of 2.1%.

Figure 2



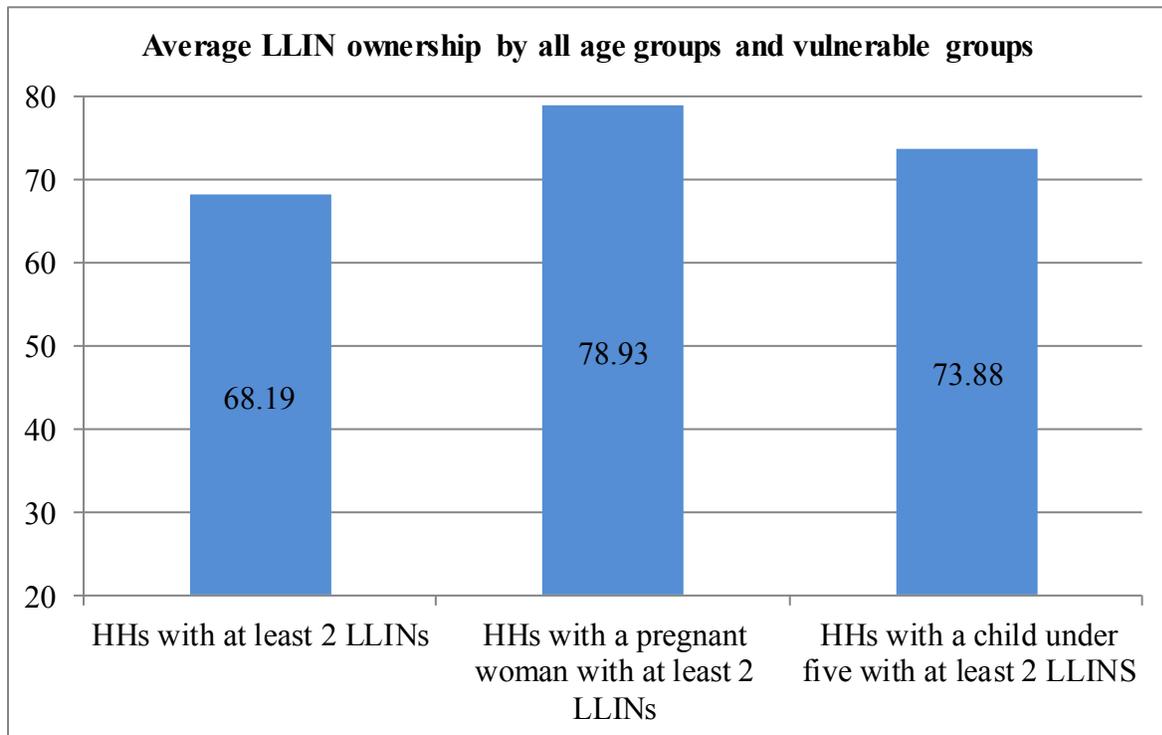
LLINs ownership was relatively low in countries such as Liberia, Kenya and Guinea during the final evaluation as these countries had low in-country resource for continuous nets replacement.

Mozambique distributed a little over 51,000 LLINs in 2012 but these were not meant for replacement. It was a mass distribution in a different location. Inasmuch as net ownership in the new location was high (over 90%), overall LLIN ownership in Mozambique was low due to lower figures recorded in old program site.

Long Lasting Insecticidal nets ownership was assessed for extreme vulnerable groups. Analysis of data on LLINs ownership among households with pregnant woman indicated that 78.93% of all households sampled across the countries owned at least two LLINs. Analysis of LLIN ownership among households with children under five years indicated a value of 73.88%.

LLIN ownership is thus highest amongst households with pregnant women, followed by households with children under five years. Proportion of households with at least two LLINs recorded the lowest value as shown in figure 3.

Figure 3



Trend Analysis of households with two LLINs indicated a sharp increase from baseline to first evaluation. This then increased gradually and in some cases levelled, in subsequent evaluations as per figure 3 below. Some countries however recorded dips in household LLIN possession.

Figure 4

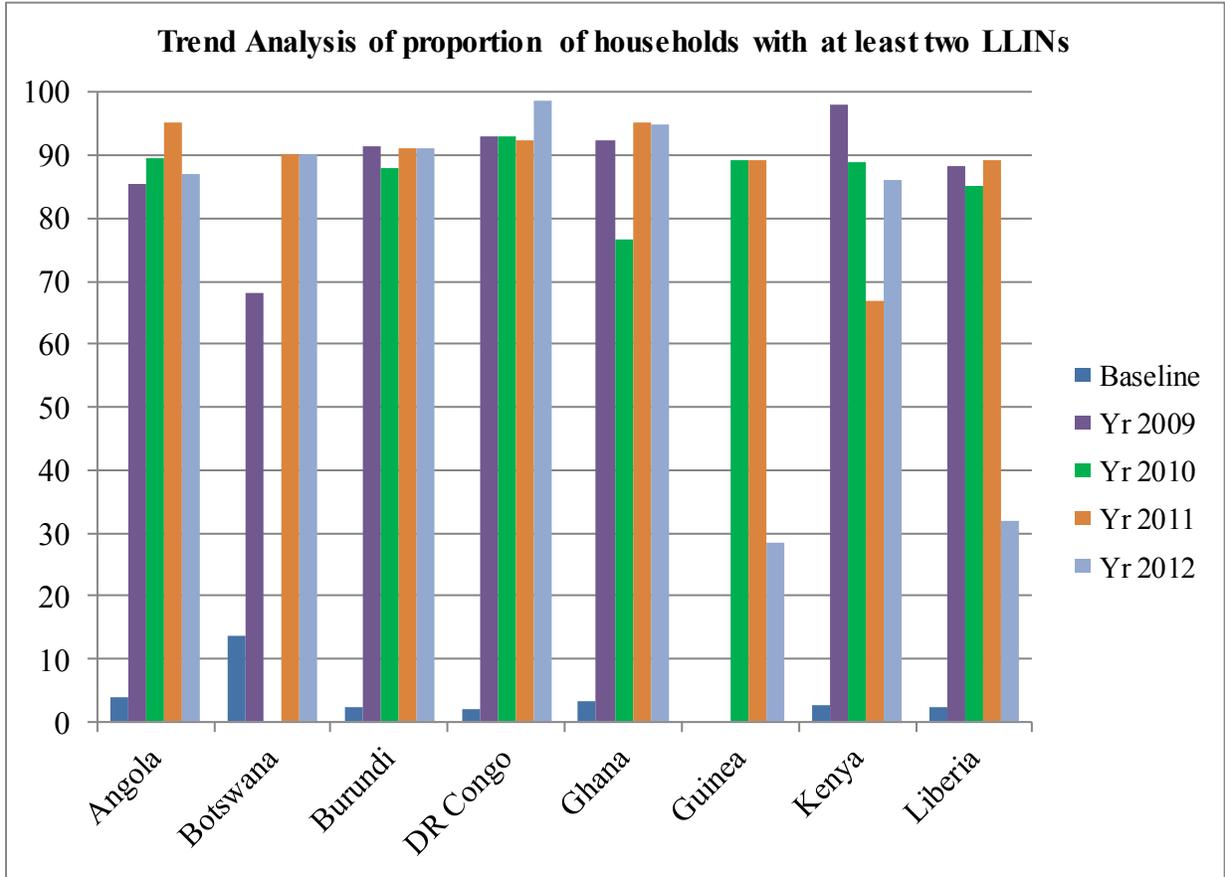
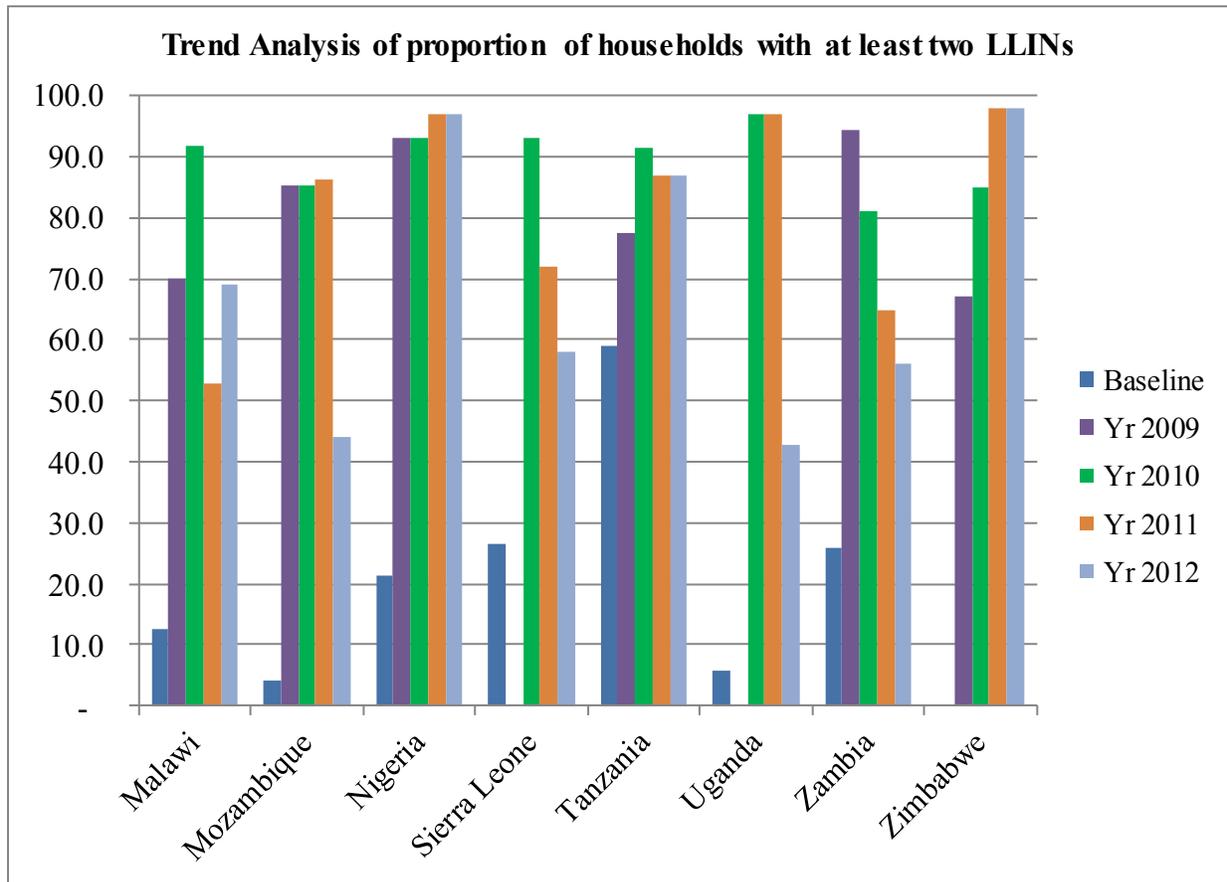


Figure 5



### LLIN Usage

LLINs usage (sleeping under LLINs consistently and correctly) is important as it creates a protective barrier between individuals sleeping under the net and the malaria vector. Promoting the use of LLINs is indeed the main focus of the *NetsforLife*® program. LLIN usage was assessed for population of all ages and for sub-groups specifically pregnant women and children under five who are most vulnerable to malaria.

The results of the final evaluation revealed that about 74.9% of population of all ages slept under LLINs the previous night. A high value (85% and above) was recorded in some countries including Burundi (90.1%), DR Congo (90.1%), Ghana (87%), Guinea (100%), Kenya (89%) and Mozambique (88.5%).

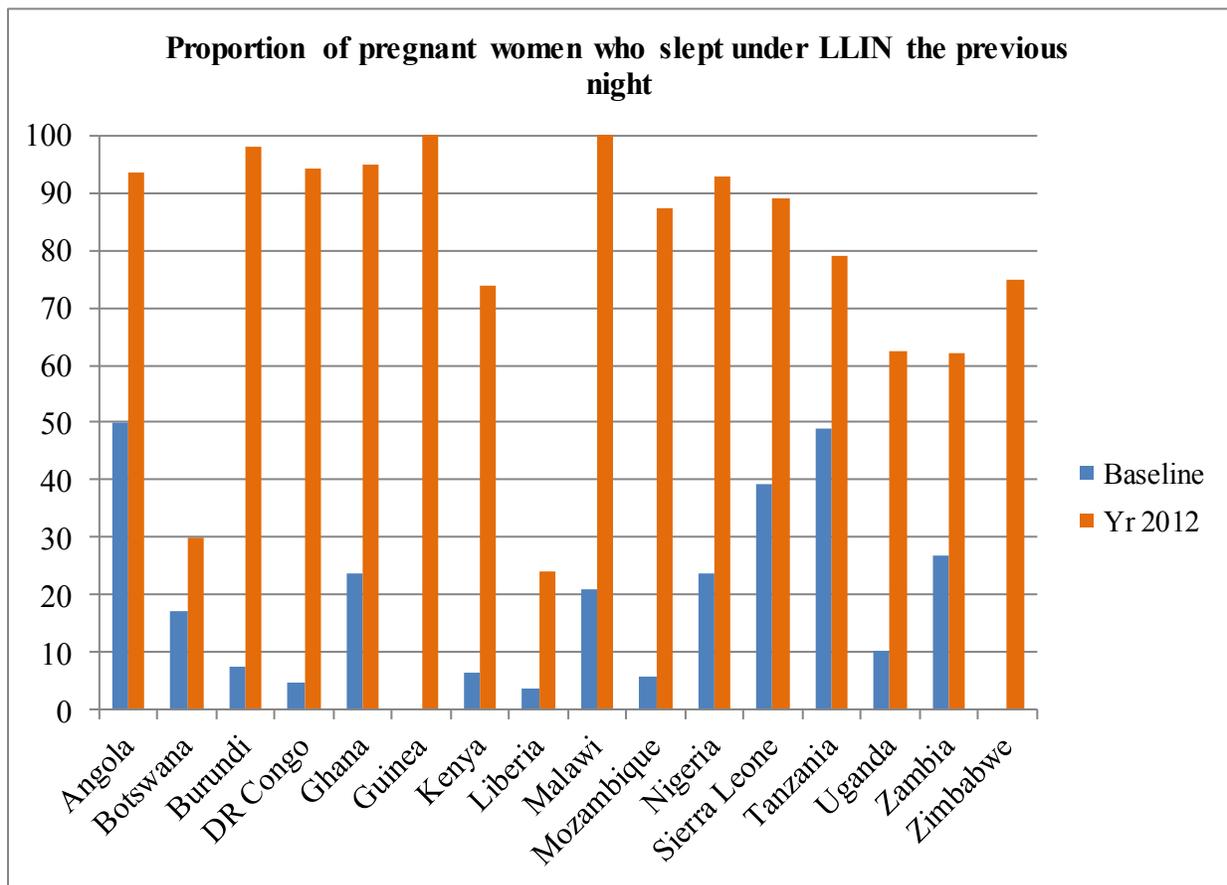
LLIN utilization amongst the vulnerable groups was higher than the general population (population of all age groups).

**LLIN usage amongst pregnant women**

Malaria in pregnancy can result in spontaneous abortion, premature delivery, severe anaemia, still births amongst others. Pregnant women therefore need to be protected from bites from the anopheles mosquito, thus, the need for them to sleep under LLINs every night. Average LLIN utilization among pregnant women across the countries at the end of phase II evaluation was 78.5%, a significant increase from a baseline value of 18.05%.

As reported in the figure below, majority of the countries recorded more than 85% for LLIN usage by pregnant women with Guinea and Malawi recording the highest value of 100%.

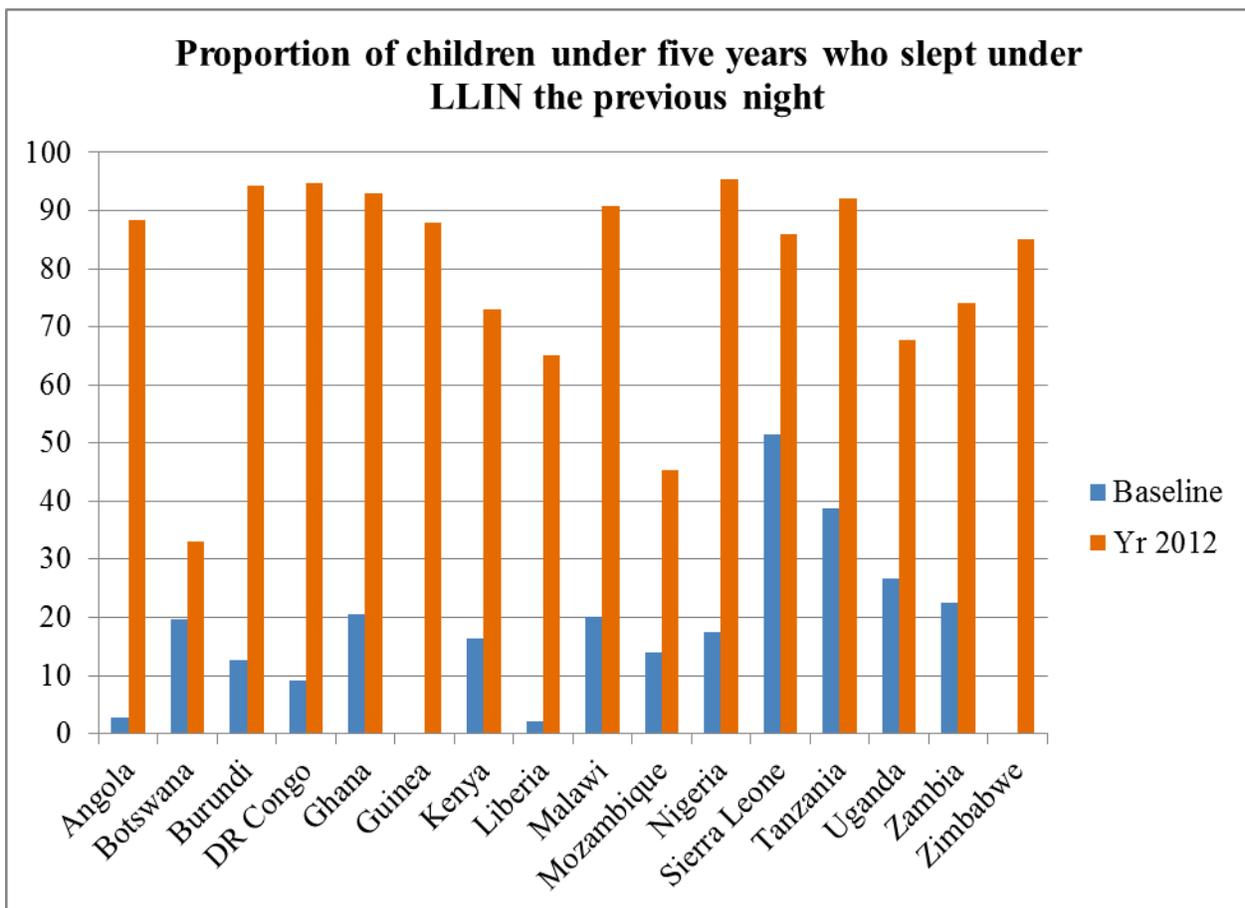
Figure 6



### LLIN usage amongst children under five years

Children especially under-fives are very susceptible to malaria infection which can result in severe effects such as convulsions, brain damage and ultimately, death, if not treated promptly. Thus, children in this age group need to sleep under LLINs every night to avoid such consequences. The end of phase II evaluation revealed an average value of 79.06% LLIN utilization, an increase from a baseline value of 17.15%.

Figure 5



Trend Analysis of LLIN usage in pregnant women and children under five indicates a sharp increase in the first evaluation from a rather low baseline value which increased gradually and in some cases levelled in subsequent evaluations. During the end of phase II evaluation however, a number of countries recorded decreases in LLIN utilization by both pregnant women and

children under five years as in figures 6 and 7 below. This could be attributed to nets beginning to see deterioration and low replacement as nets were mostly not available for replacement but rather for mass distribution especially in later part of 2011 and 2012. Malawi however recorded 100% LLIN usage amongst pregnant women during the final phase II evaluation.

Figure 6

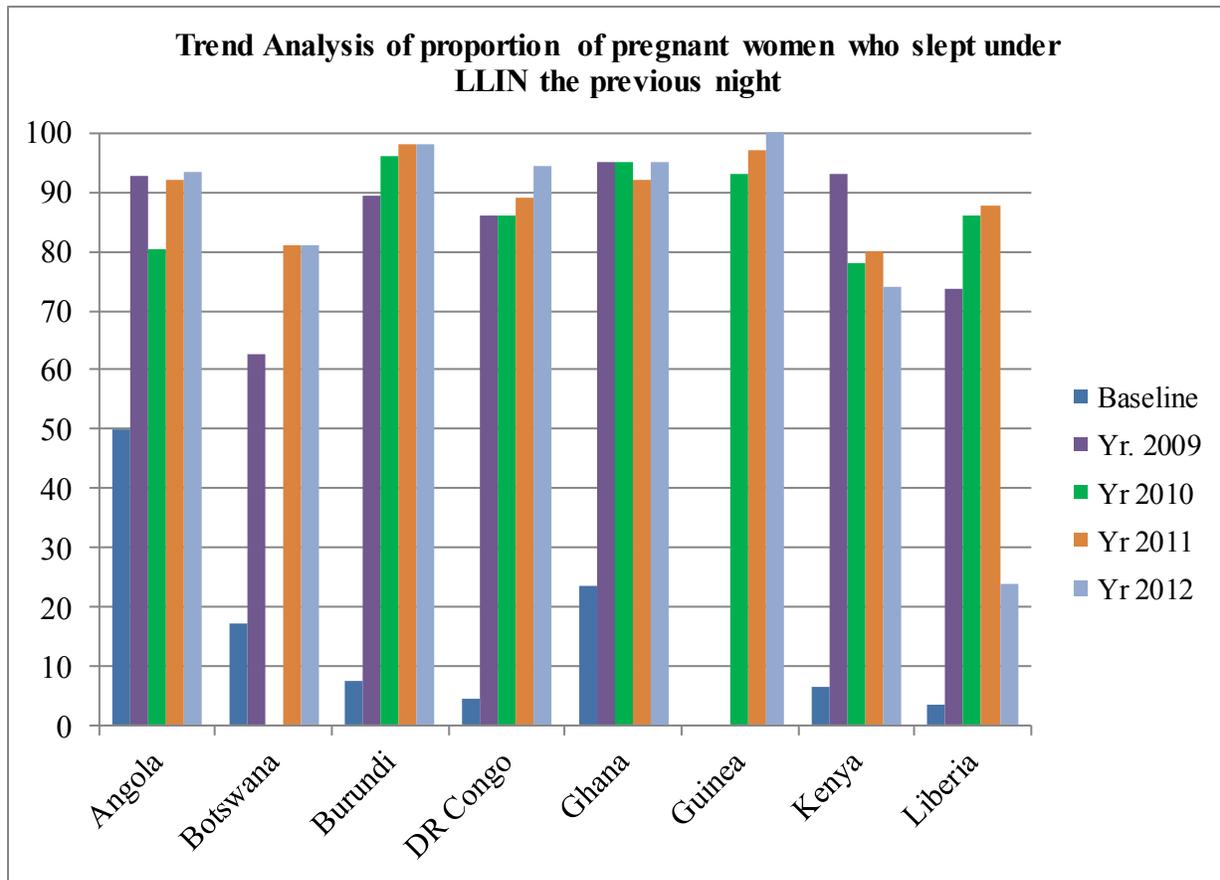


Figure 7

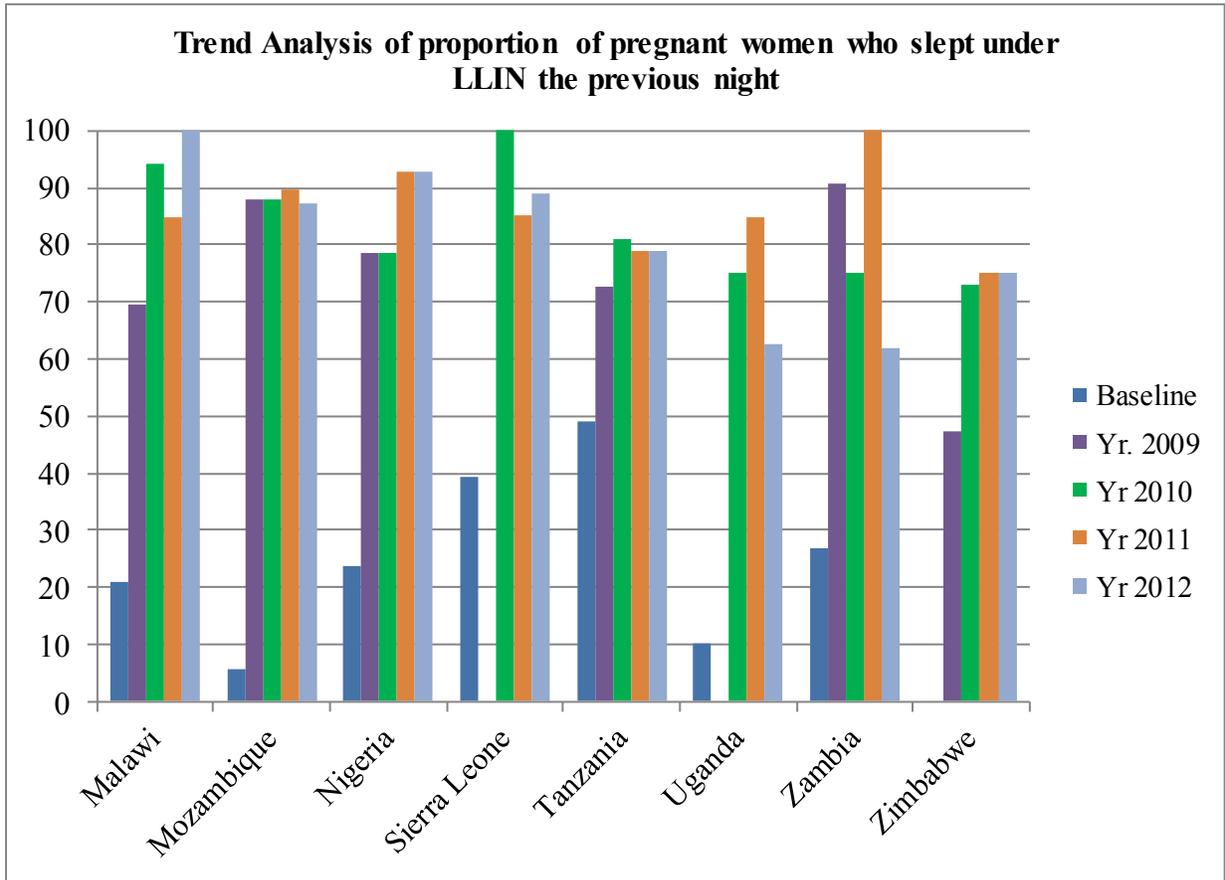


Figure 8

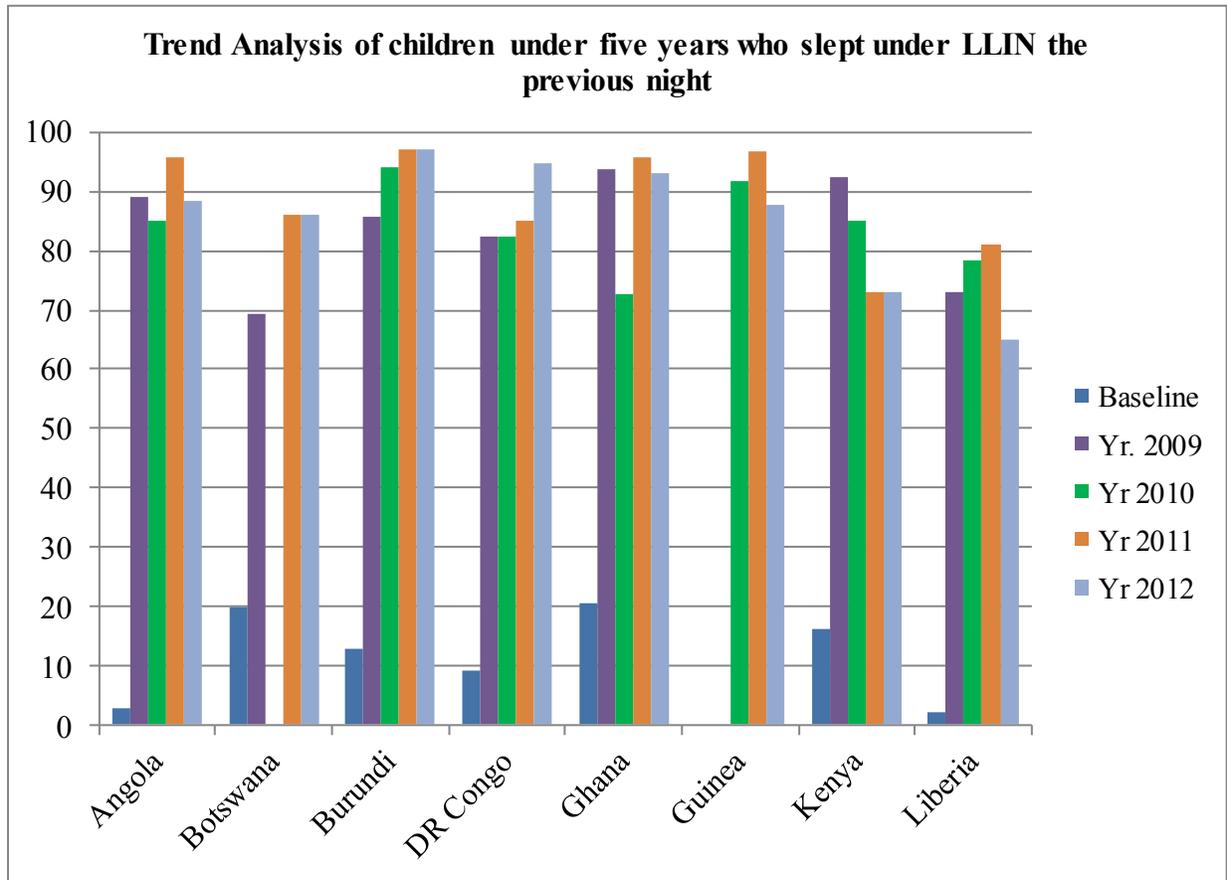
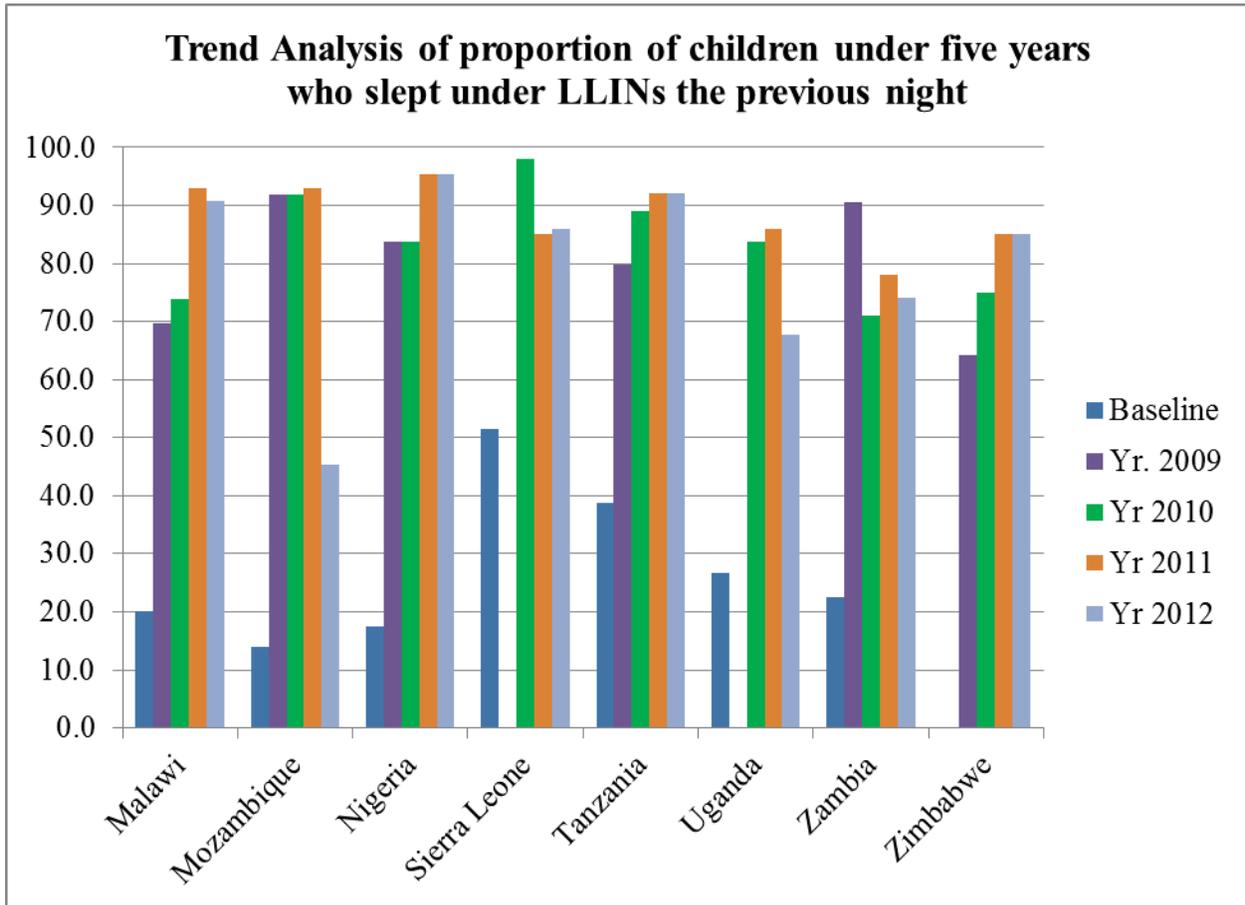


Figure 9



### Knowledge

Knowledge on malaria prevention, treatment, usage and maintenance of LLINs are important components of *Netsforlife*® methodology. Beneficiaries need to be correctly educated/ sensitized on the benefits of mosquito nets and how to use and care for the nets as this is vital in the correct and consistent use of nets. Myths about causes of malaria and sleeping under the mosquito nets, such as “I feel like I am a corpse” need to be addressed adequately to instil a net culture. Program staff in the countries organize sensitization activities in project sites and this is complimented by the one-on-one education and monitoring/follow up on net usage by trained malaria agents.

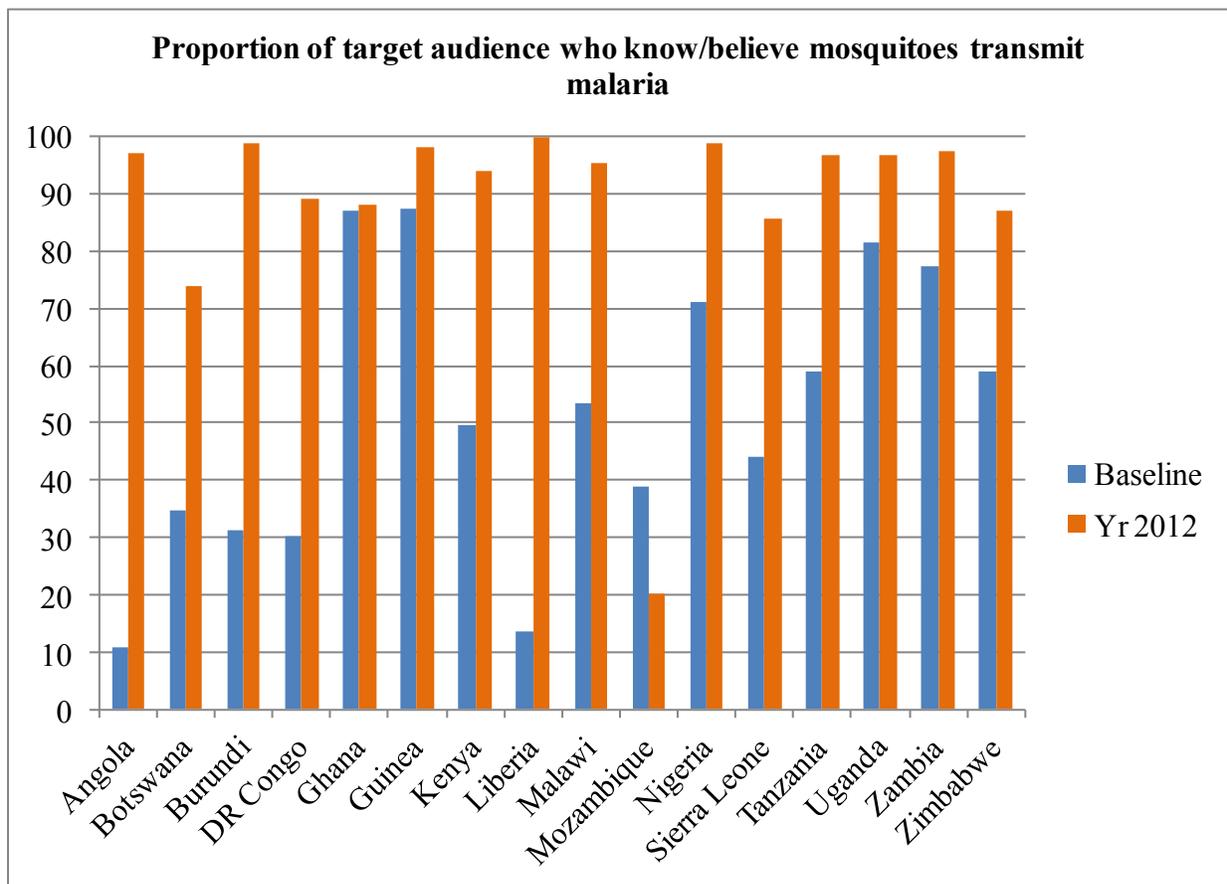
The end of phase II evaluation revealed that knowledge indicators have improved significantly in almost all the project sites over the entire period of the program with the exception of

Mozambique where relatively lower values were recorded during the final evaluation. Possible reasons for this short falls could be attributed to ill-health of the National Program Coordinator and mismanagement of knowledge indicators questions during survey. This is however, being investigated as explained under the discussion section.

***Proportion of respondents who know/believe mosquitoes transmit malaria***

At baseline, about 51.3% of target audience knew how malaria is transmitted; at the end of phase II, this had increased to an average value of 88% across the country programs with Liberia being the country with the highest recorded increased in knowledge. With the exception of Mozambique and Botswana which recorded figures below 75%, 14 out of the 16 countries did record figures above 87% as depicted in the figure below.

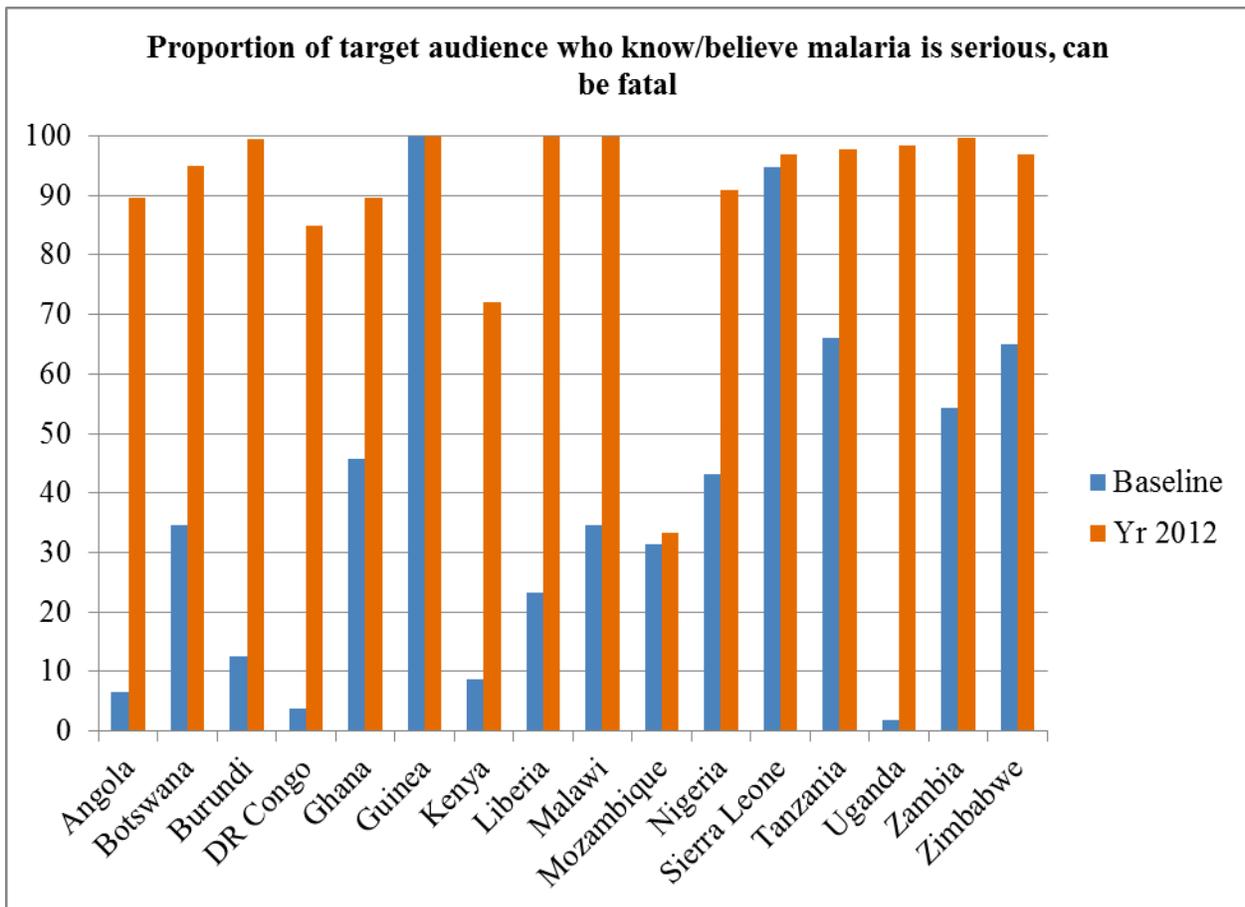
Figure 10



***Proportion of target audience who know/believe malaria is serious, can be fatal***

Knowledge on malaria severity/fatality improved considerably across all project sites with the exception of Mozambique. Fourteen out of the sixteen countries increased knowledge on malaria severity to figures above 80% as illustrated in figure 11 below. Malawi, Liberia, Guinea, Zambia and Burundi recorded figures hovering around 99%

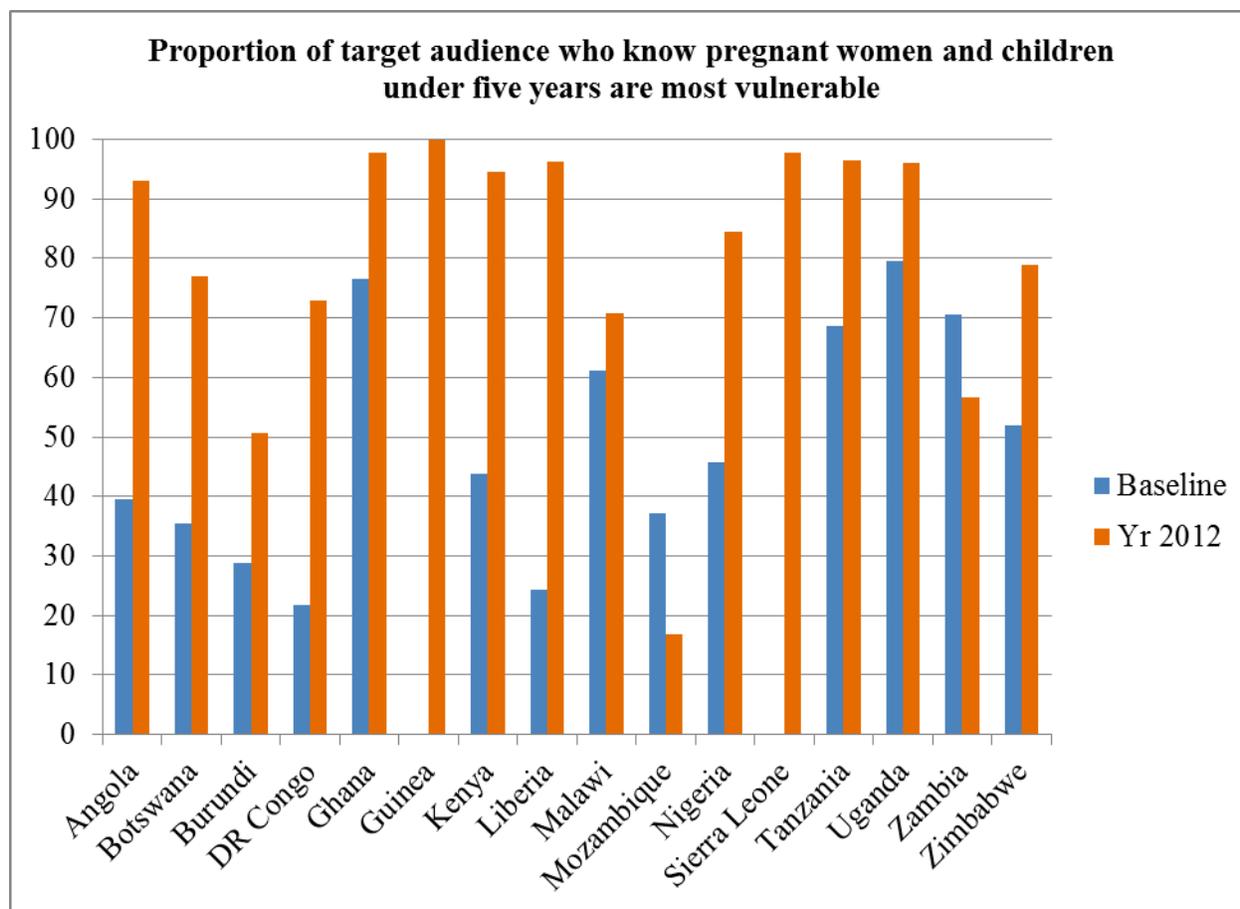
Figure 11



***Proportion of target audience who know pregnant women and children under five years are most vulnerable***

Pregnant women and children under five years are at a higher risk of malaria infection compared with the rest of the population. Knowledge of these extreme vulnerable sub-populations increased to over 90% in 8 out of the 16 countries as illustrated below. Knowledge of vulnerable sub-populations dipped in Mozambique which becomes difficult to explain as MCAs do not give contrary or false messages in their communities.

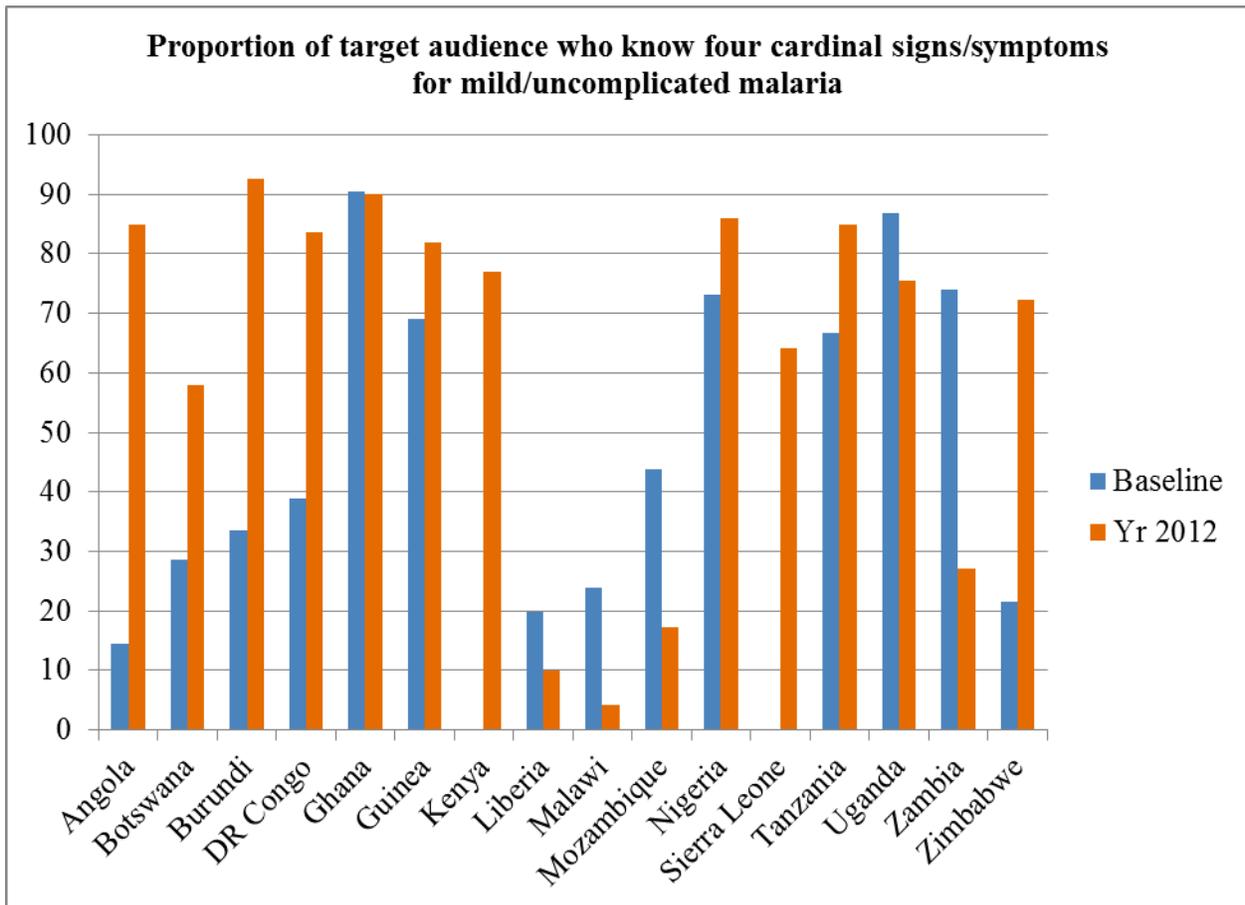
Figure 12



***Proportion of target audience who know four cardinal sign/symptoms of mild/uncomplicated malaria***

The knowledge of signs and symptoms of malaria improved considerably in project sites in ten of the countries with Burundi recording the highest proportion (92.6%) of target audience who could identify four cardinal signs/symptoms of mild/uncomplicated malaria. Angola, Ghana, Burundi, Dr Congo, Guinea, Nigeria, and Tanzania recorded knowledge increased above 80% as observed in figure 13.

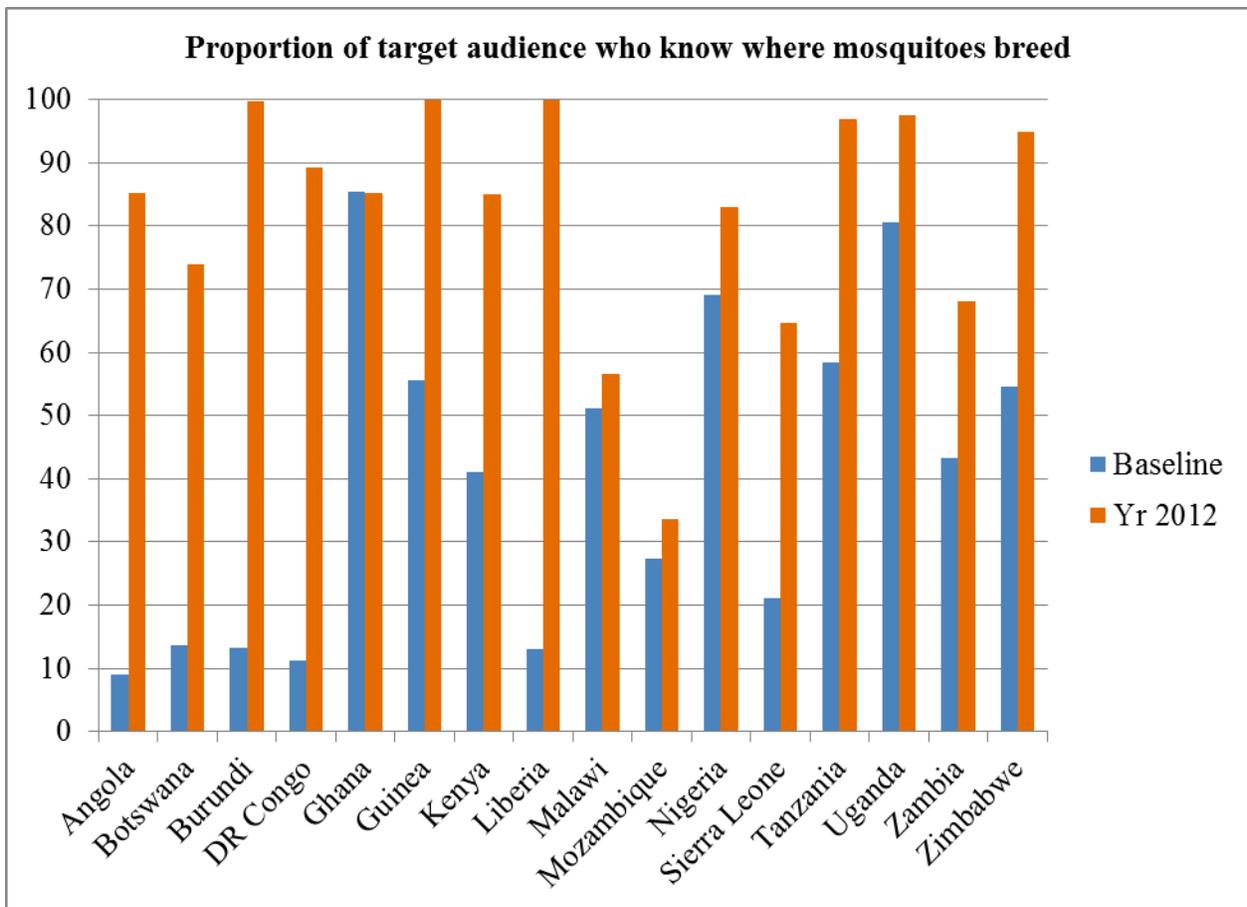
Figure 13



***Proportion of target audience who know where mosquitoes breed***

Knowledge of breeding sites of mosquito is vital in malaria prevention as households cease to create favourable environment for mosquitoes to breed. All countries recorded significant increase in knowledge of mosquito breeding sites with 11 out of 16 countries recording value above 80%. Although Malawi and Mozambique recorded figures below 60%, there was increase in knowledge as compared to baseline values.

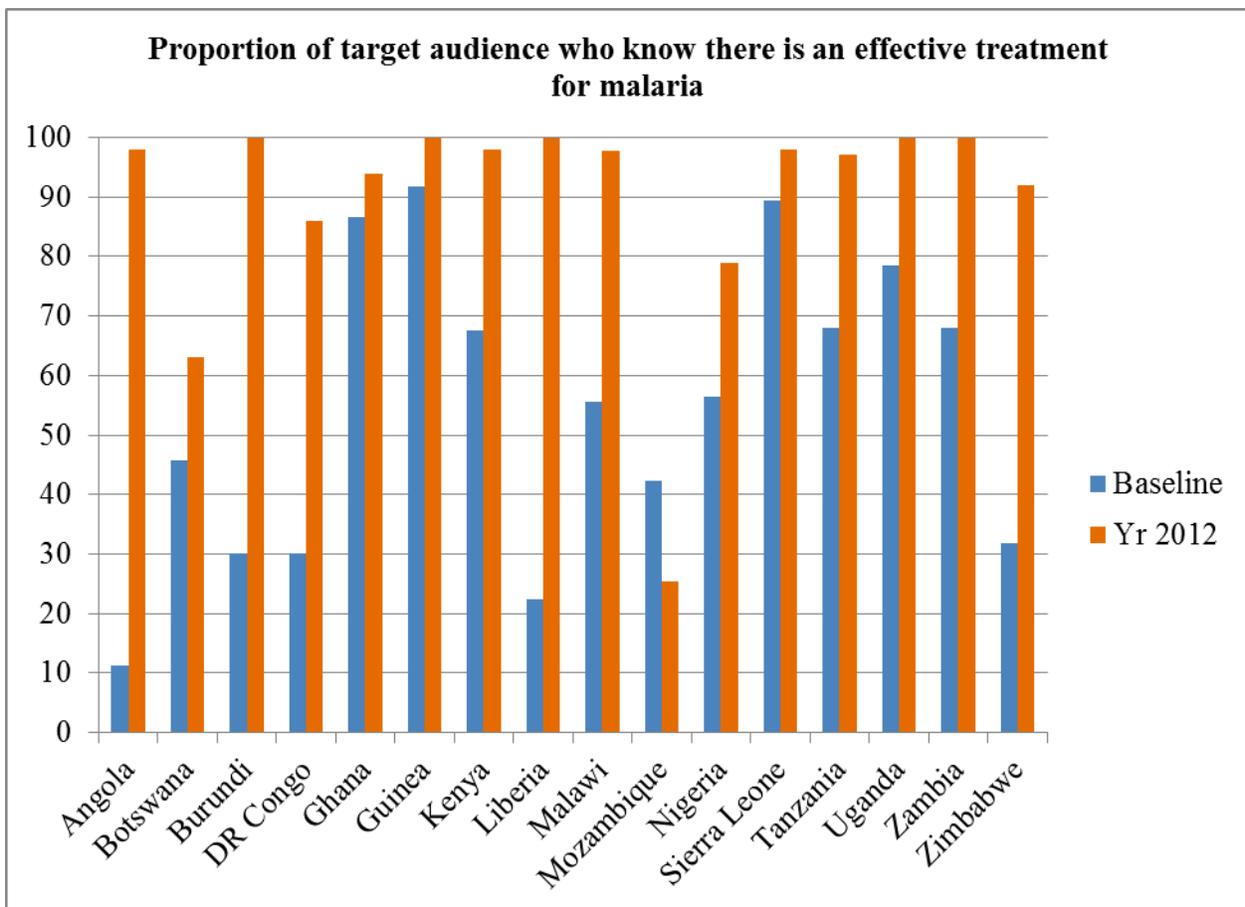
Figure 14



***Proportion of target audience who know there is an effective treatment for malaria***

Knowledge of national recommended medicine for treating malaria and its potency helps to boost confidence in seeking for early treatment. Twelve out of sixteen countries recorded increased values above 90%. Compared with baseline values, all countries increased knowledge on potency of national recommended anti-malaria medicine as depicted in figure 15 below.

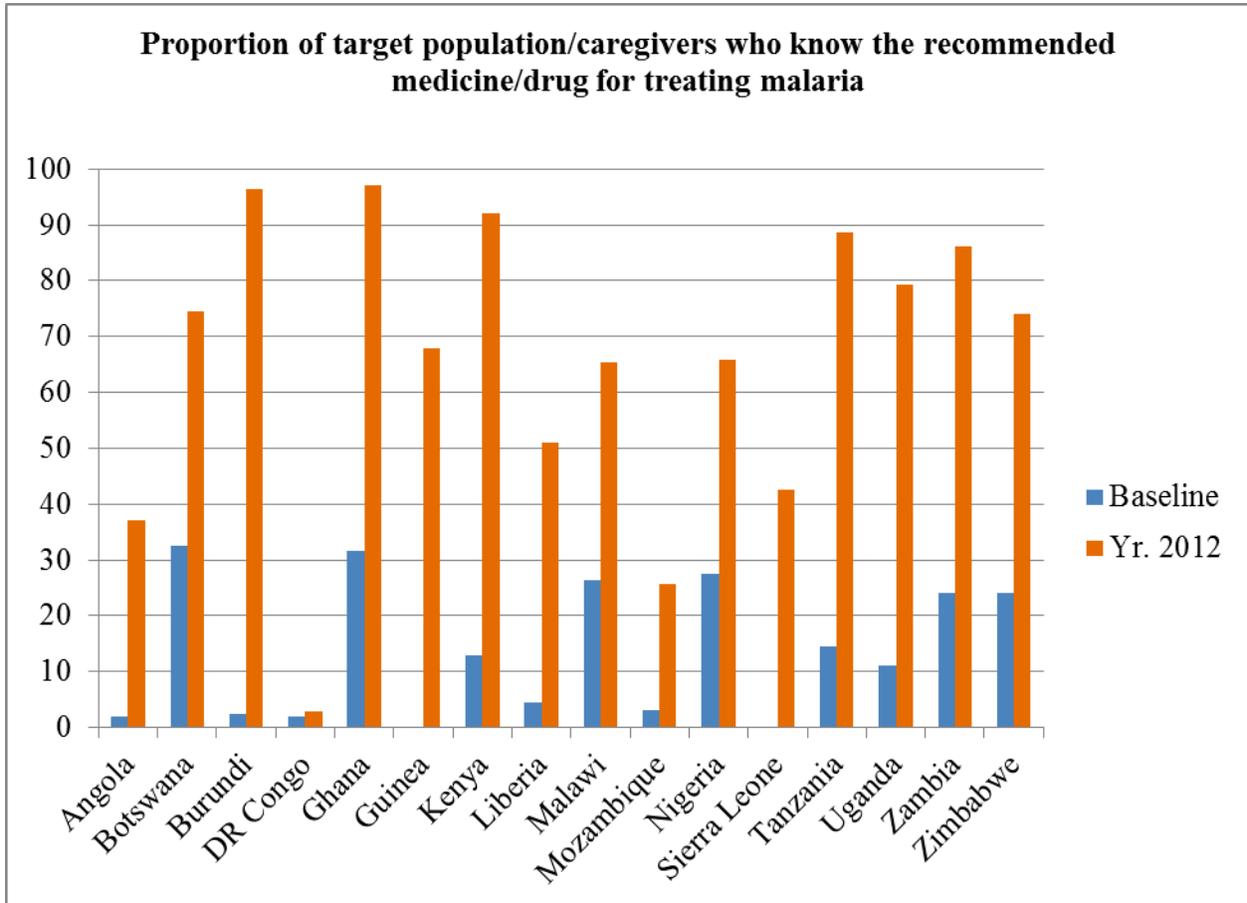
Figure 15



***Proportion of target population/caregivers who know the recommended medicine/drug for treating malaria***

Knowledge on the recommended medicine for treating malaria increased in all project countries as compared with the baseline value with five countries recording values above 80%.

Figure16

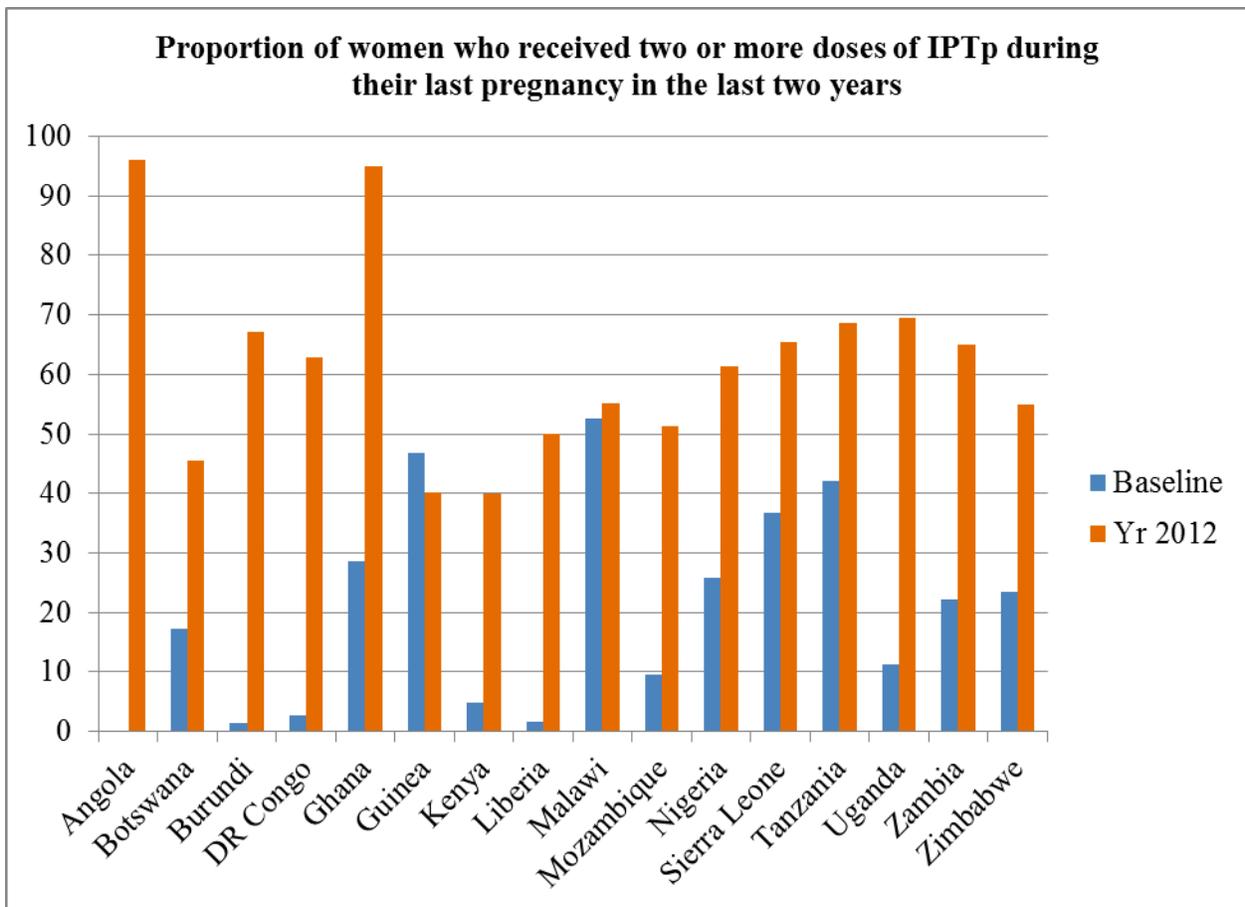


Angola, DR Congo, Mozambique and Sierra Leone recorded value below 50% and these were obvious as these countries continue to struggle to fill health facilities with adequate quantities of anti-malaria.

***Proportion of women who received two or more doses of IPTp during their last pregnancy in the last two years***

The administration of IPTp to pregnant women using the DOT method is important to prevent malaria during pregnancy. As part of the responsibilities of MCAs, pregnant women are identified and encouraged to visit nearest health facility for ANC services. Figure 17 below illustrates the proportion of pregnant women in project sites who received two or more doses of IPTp during their last pregnancy in the last two years. IPTp uptake was highest in Angola and Ghana. This could be attributed to enhanced focus of additional USAID project support to *Netsforlife*® and instituted in both countries. 14 out of 16 countries have more than 40% of pregnant women taking at least 2 doses of IPTp in their last pregnancy.

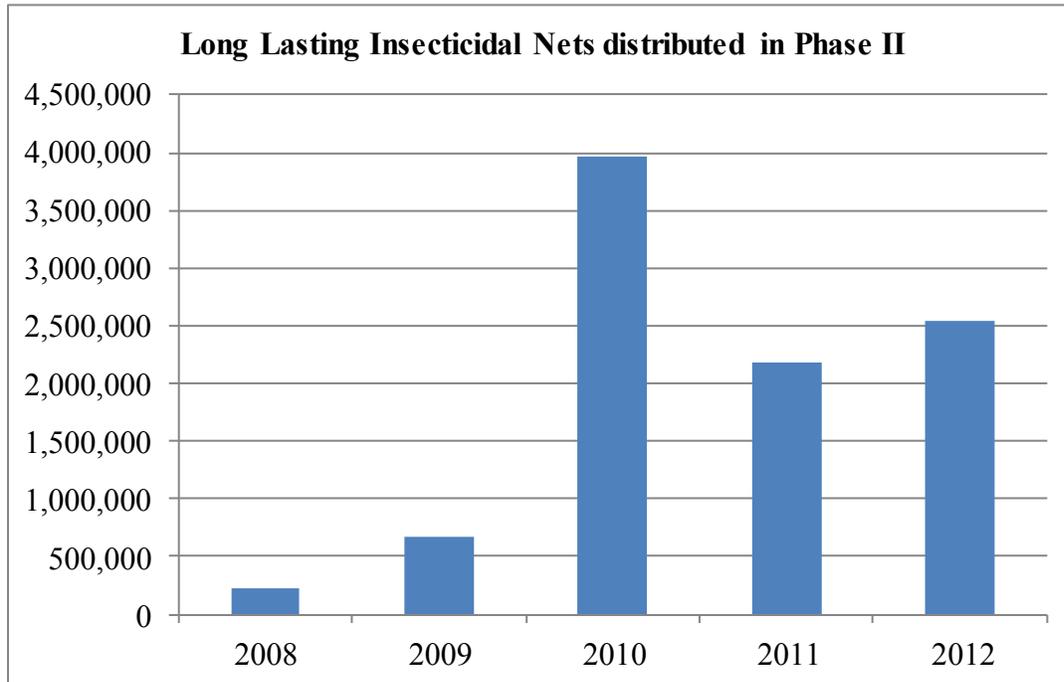
Figure 17



## Discussion

- Direct Output Indicators

Figure 18

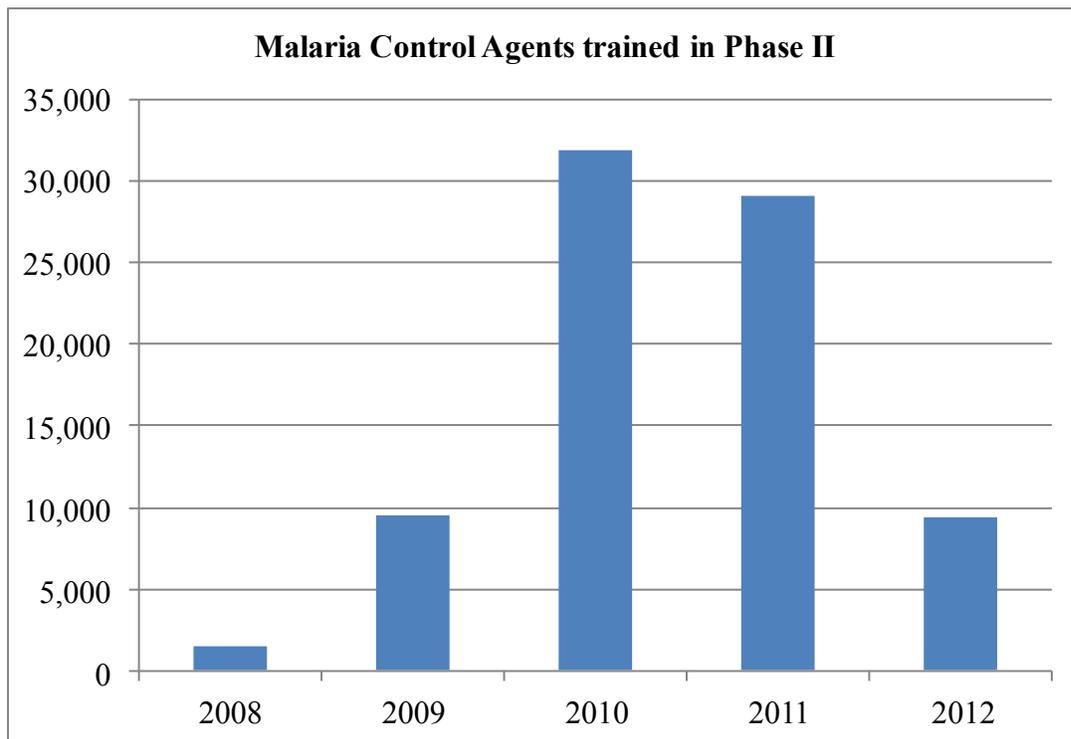


Phase II program which began in October 2008 distributed 227,774 LLIN in 2008. These nets were spill-over from phase I. The change in business model came along with its own challenges of acquiring nets in-country for distribution. However, after a year of coaching partners in securing in-country resources, the program did experience a massive increase in total LLIN distributed in 2010 (3,969,693 LLINs were distributed). In 2011 *Netsforlife*® did experience a significant decline in total LLINs distributed (2,180,760 LLIN). This period also offered us a break to follow up with nets that had been distributed in previous years. During 2012, the program increased marginally from the previous year. Total distribution in 2012 was 2,535,657 LLIN.

*Netsforlife*® nets distribution trend is similar to global nets availability. According to World Health Report for 2012, the world recorded its highest distribution of LLINs in 2010 when an estimated 145 million LLINs were distributed. In that year *Netsforlife*® distributed its highest

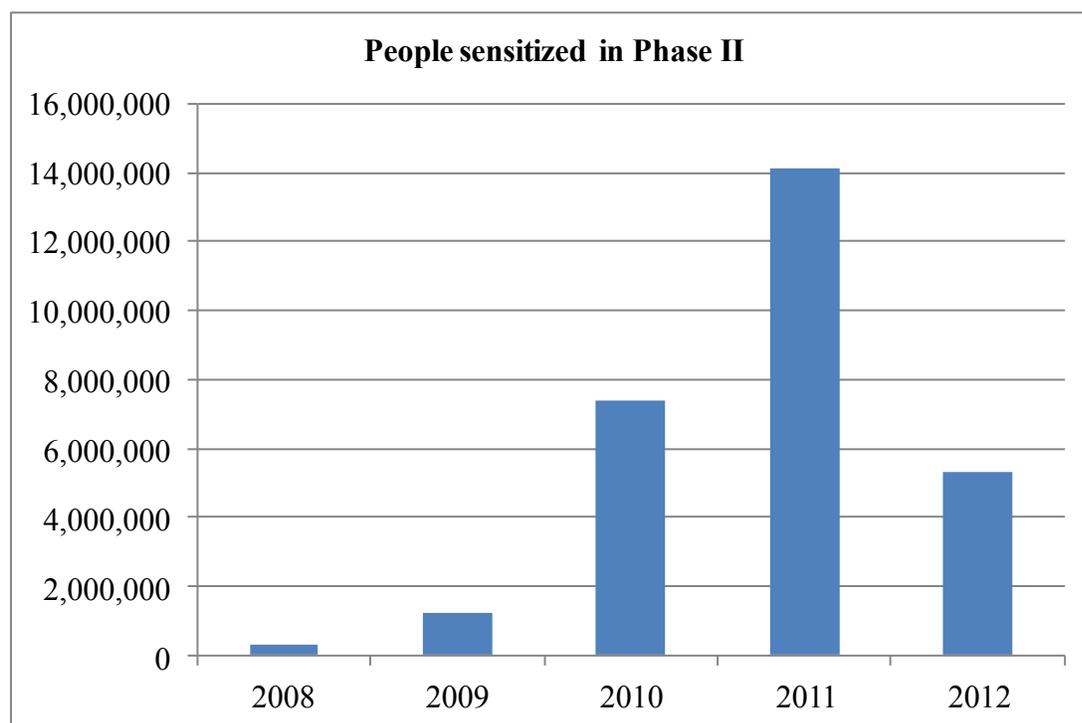
ever in a year, 3,969,693 nets representing 2.8% of global nets delivered. Global nets delivery declined sharply in 2011 and 2012. In 2012 global nets distributed was 66 million and *Netsforlife*® contributed 3.8% of global achievement. The decline in total nets distributed globally is worrisome as there is the need to achieve universal coverage and sustain the gains made in malaria prevention. Globally, there is the need to distributed 150 million LLINs annually in order to achieve sustainable gains in malaria prevention in malaria endemic areas.

Figure 19



The training of MCAs is dependent on LLIN availability therefore the trend in number of people trained follows a similar pattern as that of total LLINs distributed. The MCAs assist in household registration, LLIN distribution, SBCC interventions and follow-up of LLINs at the household level in their respective communities. The highest number of MCAs trained was achieved in 2010 and this declined in 2011 and 2012. The number of people trained in 2012 was low as most training had been done in previous years to equip MCAs with adequate knowledge and skills needed for their community intervention activities.

Figure 20



Community malaria advocacy, sensitization and house-to-house education are undertaken by MCAs. Therefore the number of people reached is dependent on the number of MCAs available to undertake these activities. *Netsforlife*® phase II has reached out to 28.4 million people across 17 countries in sub-Sahara Africa. The number of people sensitized peaked in 2011 after the heavy distribution in 2010. The decline in 2012 could be attributed to having finished following most of the nets distributed in 2010 hence a relatively less number of MCAs were needed to follow 2011 LLINs.

- **LLIN Ownership**

In order for project participants to have protection from malaria, they need to have access to LLINs and equipped with adequate knowledge on net use and its care. *NetsforLife*®'s initial model aimed at buying nets and shipping them to partners for distribution to vulnerable groups and hence, most households with pregnant women and children under five years owned a net during the first phase of the program. When the program responded to WHO's call for universal coverage, all country programs were directed to fill in the gaps in their project sites. However,

with the change to in-country resource acquisition, only countries that had LLINs from Global funds and USAID/PMI, etc, had access to nets from the NMCP for onward distribution. This affected the program's LLIN ownership indicator in countries like Guinea, Zimbabwe, etc, who could not have access to LLINs solely because there were no LLINs in-country. On the other hand, partners who received nets from the Ministry were also faced with the problem of inadequate nets for replacement and continuous distribution in later months of 2011 and 2012. Hence the average proportion of households with at least 2 LLINs was quite low across the countries at the end of phase II. As an example, Liberia had its mass distribution in 2010 and therefore net possession and usage was high in Liberia in both 2010 and 2011. Life expectancy of hanged nets hovers around 24 months. Therefore at the time of final evaluation survey, countries that had early 2010 nets distribution and could not do adequate nets replacement and continuous distribution accounted for the low LLIN coverage. LLIN possession was however high and above the WHO/RBM target of 85% in a number of countries like Angola, DR Congo, Ghana and Kenya. The high value for LLIN ownership in these countries, example Ghana, can be attributed to the recent mass LLIN campaign which adapted *NetsforLife*®'s hang-up strategy. The proportion of households with pregnant women with at least two LLINs was higher than the proportion of all households with at least two LLINs. As part of National Malaria Control programs strategies in almost all the countries, LLINs are distributed to pregnant women during their first visit to a health facility (antenatal clinics), accounting for the relatively high proportion of households with pregnant women with at least two LLINs.

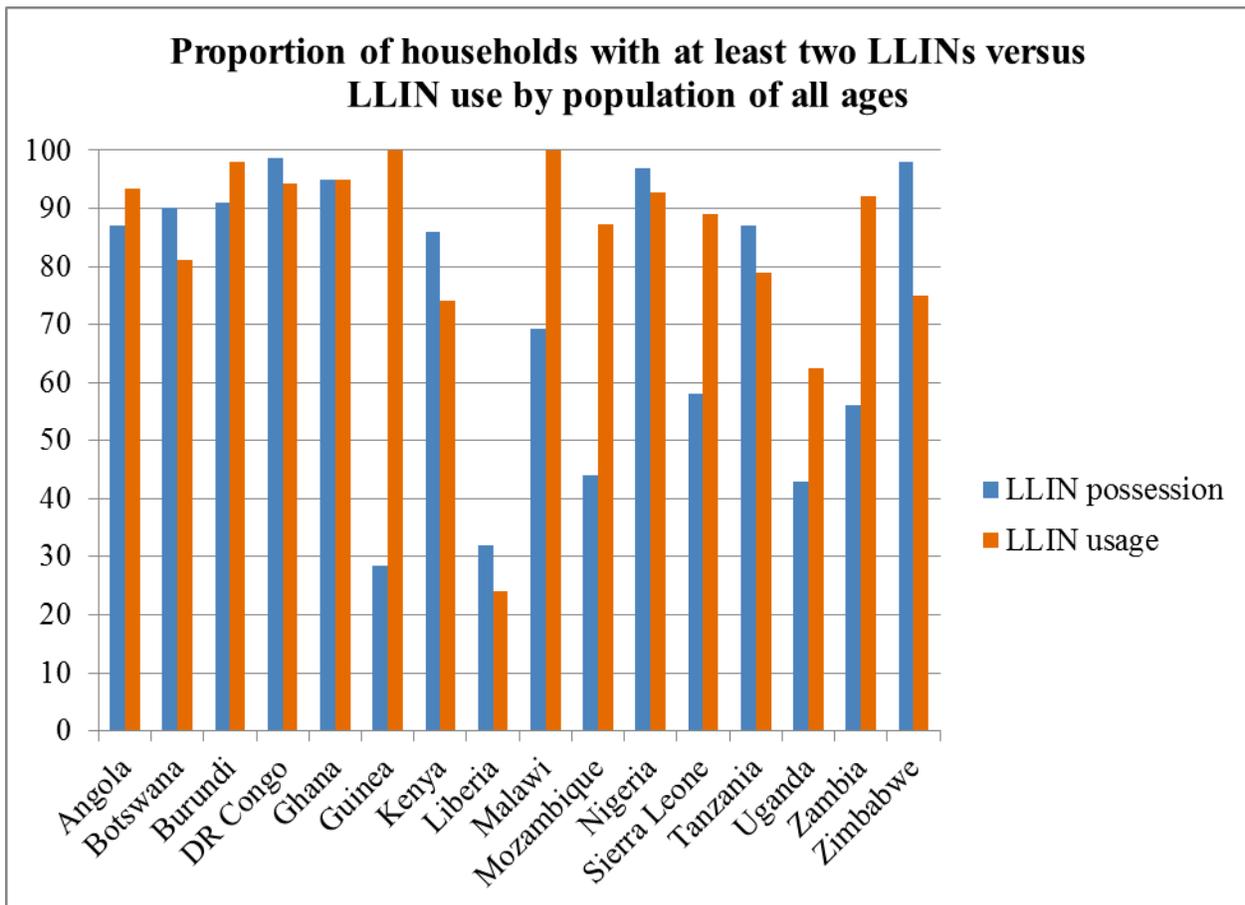
- **LLIN Usage**

As reported in the results section, LLIN use was highest among pregnant women (81.65%), followed closely by children below five years (80%). LLIN use among the entire population was relatively low in the final year of evaluation (71%) and this seems to indicate that the most vulnerable groups to malaria episodes ie. pregnant women and children under five seem to be given priority for LLIN use in households. This further implies that knowledge on vulnerable groups is high and has been well accepted by households. LLIN usage is also positively correlated to LLIN ownership. As ownership begins to drop due to nets deterioration, usage by

the entire population will also begin to see a nose dive. This calls for intensive continuous nets replacement in order to sustain the gains in malaria prevention.

The unique hang-up strategy of the *Netsforlife*® program coupled with its unique methodology of using trained malaria agents to educate households and monitor/follow up nets at the household level has ensured the constant increase in LLIN usage by the population especially the vulnerable groups.

Figure 21



- **Knowledge**

A crucial element in the fight against malaria is the ability to reach the target population with the right/correct messages/information. Knowledge indicators have improved considerably over the years and this improvement can be attributed to the continued messages and information from

program staff, malaria agents, community leaders, church groups amongst others. Various myths on malaria transmission and LLIN use have been addressed to a large extent and this has reflected in the increase in LLIN usage. During this final evaluation, Mozambique had a turn around on knowledge indicators. The decline in malaria prevention knowledge could be attributed to ill health of National Project Coordinator during the final year of the program. The National Project Coordinator was ill for almost 12 months and that significantly affected direct field monitoring. Inasmuch as project beneficiaries had their nets in place, house-to-house education stalled and this did affect improving the knowledge on malaria prevention. Another possible reason for the turnaround could be attributed to how the knowledge indicator questions were asked by the interviewers. This however is still under investigation.

## **Conclusion**

Based on the findings, it is clear that *NetsforLife*® has made significant gains in increasing knowledge and practices related to malaria prevention and control during its phase II program. The program has contributed to the fight against malaria and subsequently the reduction in malaria related morbidity and mortality in all the countries. In addition to this, the specific objectives of the *NetsforLife*® phase II program have been achieved.

## **Recommendations**

In order to sustain the gains under *Netsforlife*® phase II and improve the quality of life of project participants, the following will be recommended.

- Continuous nets replacement exercise: There will be the need for either the program and/or the respective National Malaria Control Program to embark on continuous net replacement. Mosquito bed nets do have a life-span of not more than 3 years. Nets with holes need to be identified and replaced immediately through continuous monitoring at household level. Failure to embark on continuous nets replacement could result in negating the gains made under *Netsforlife*® phase II. There is the need to sustain the gains.

- Periodic household education on net use and care: The proper and continuous use of mosquito bed nets is influenced by continuous education. At periodic intervals, the NMCP should use appropriate medium in creating visibility and education on nets usage.
- Social Marketing of LLIN: Households should be encouraged to replace their worn-out nets. However, the cost of nets is out of reach for many households in rural communities. The introduction of social marketing of nets could ensure the prices of nets are subsidized. The involvement of private-public partnership in making bed nets available in remote rural areas as well as the urban areas will encourage households in replacing worn-out nets.
- Operational research on continuous nets replacement method: Currently, *Netsforlife*® uses its network of volunteers in conducting household monitoring of nets and providing education. Through this monitoring, identified worn-out nets are replaced by volunteers based on nets availability. On the global malaria landscape, various continuous net replacement methodologies are being practiced including distribution through ANC clinics and school-based distribution. It is being recommended to undertake an operational research in identifying which of these continuous nets replacement method is most efficient and yield maximum impact in preventing malaria.
- Advocacy on best practices: *Netsforlife*® has exhibited some good results from its community malaria prevention program. It has demonstrated effective and operational M&E system and the phase II results are readily available policy advocacy tools. It will be recommended *Netsforlife*® share its best practices in influencing nets distribution policy at the national level.

## Story of Change

### 1. No more miscarriages; the immense benefit of sleeping under LLINs

Umuonyekamma is a community in the Diocese of Aguata, Nigeria. Mrs. Charity Udoka, a member of the community and beneficiary of the *Netsforlife*® program, seeing the benefits she has obtained from the LLINs said, if not for the nets received, she would as usual have had another miscarriage. Narrating her story, Mrs. Ndoka lamented that she was amongst the many people in her community who believed that mosquito nets can affect humans negatively since it can kill mosquitoes and other insects. According to her, she sold the first net she was given during the mass campaign in Nigeria due to ignorance. Although she had malaria constantly and experienced a number of miscarriages, she likened the mosquito net to death (you become like a corpse when you sleep under a net). However, in November 2010, during community malaria education by trained *Netsforlife*® agents/volunteers, she was rightly informed about the mosquito nets, its benefits and challenged to use the nets; since it is better to rather look like a corpse than being actually a corpse when you get malaria and die as a result. Having learnt that malaria can lead to miscarriage, Mrs. Udoka decided to use a mosquito net. Seeing the benefit she started experiencing from sleeping under the net, she bought another net at the rate of \$12. She concluded by stating that “sleeping under a mosquito net is like a baby sleeping in the protective arms of the mother...the mosquito nets have been very helpful and nothing can ever stop my entire household from using the nets no matter the cost”.

### 2. Counting malaria out! Healthy life.

Mrs. Sebina Ezekafor, an 82 year old woman lives in Eziabor community in Nigeria. During the house-to-house monitoring visit by Malaria Agents in her community, she shared her experience on the protective value of using mosquito nets. According to her, sleeping under mosquito net has really helped improved her life. Before she received a net and life-saving education from the agents, she used to visit the chemical/drug store almost every two weeks due to fever and general body weakness and thought it was due to old age. She mentioned that although she did experience an initial excessive heat and some chemical odor from the net which she didn't like, she could not discontinue using the net. She no longer slaps her face at night from the lots of

mosquitoes that troop into her room through doors, windows and patches on her walls. She eventually got used to the net and also realized that the chemical odor was no longer there. Mrs. Ezekafor stated that “she can no longer sleep without a net and all her household members are now using the mosquito nets. The highly elated woman indicated that but for old age, she would have offered herself as a malaria agent to help eradicate malaria from her community. She however promised that she would share her experience with the entire community and do the little she can for her community.



### **3. Liberation through knowledge**

Padaguur is a community of about one thousand residents, mainly peasant farmers in Garu-Tempene district in the Upper East Region of Ghana. The closest health center is about 10km away; hence pregnant women have to trek by foot to receive antenatal care services. Prior to *Netsforlife*® project, few women, many of whom work with their husbands on their farms, visited antenatal clinics. It was not uncommon for about 7 to 10 pregnant women in Padaguur community to lose their babies within a short period of time. In addition to this, many young children also died from what they termed as “strange diseases”, which residents attributed to

attacks from ancestors, witches, and other supernatural beings. Nderaug Ayinga, chief of Padaguur stated “I have experienced difficult days in this community trying to console mothers who lost their babies and husbands who lost their wives. It has not been easy to bury so many people within short intervals. We thought our ancestors were punishing us until we learnt that mosquitoes and malaria were the cause of our predicament. I am glad the community is aware of the cause of malaria and its prevention. Most pregnant women now deliver healthy babies and we all sleep well at night”. The *Netsforlife*® project educated the community on malaria and its prevention. The chief and opinion leaders also encouraged their people to sleep under nets consistently. Women were encouraged to attend antenatal care clinics and ensure they take the full required doses of IPTp; for this to be successful, pregnant women decided to attend antenatal clinics together to help support each other and reduce the boredom and fatigue of walking alone. This has gone a long way to increase IPTp uptake by pregnant women in Padaguur community.

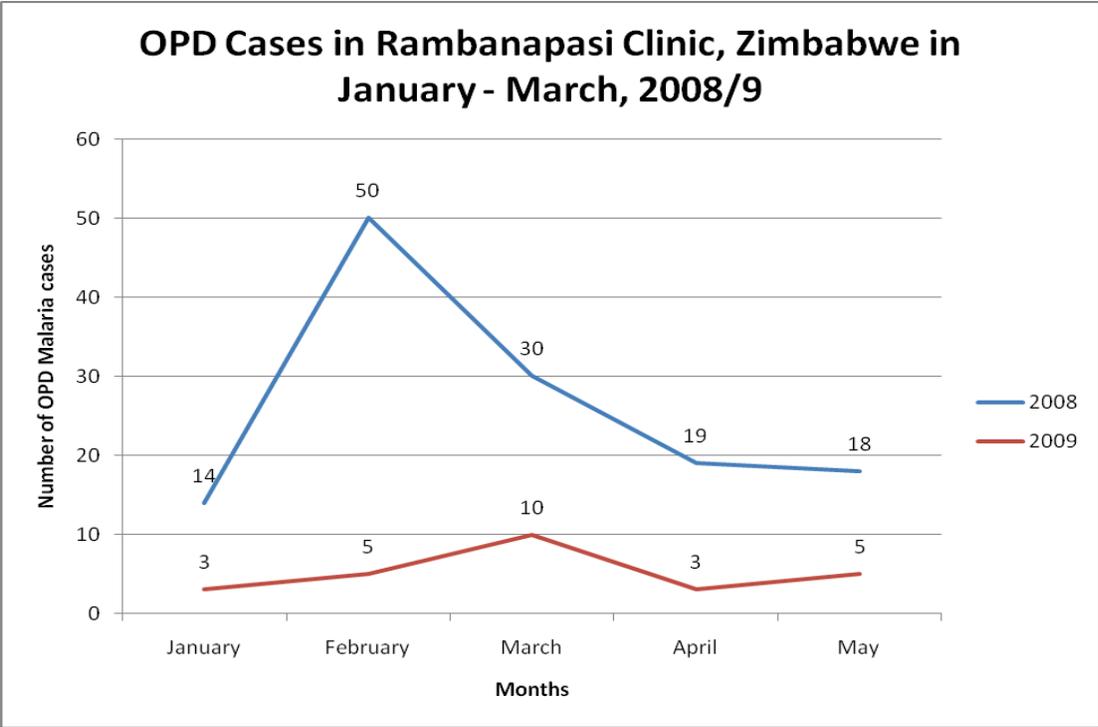
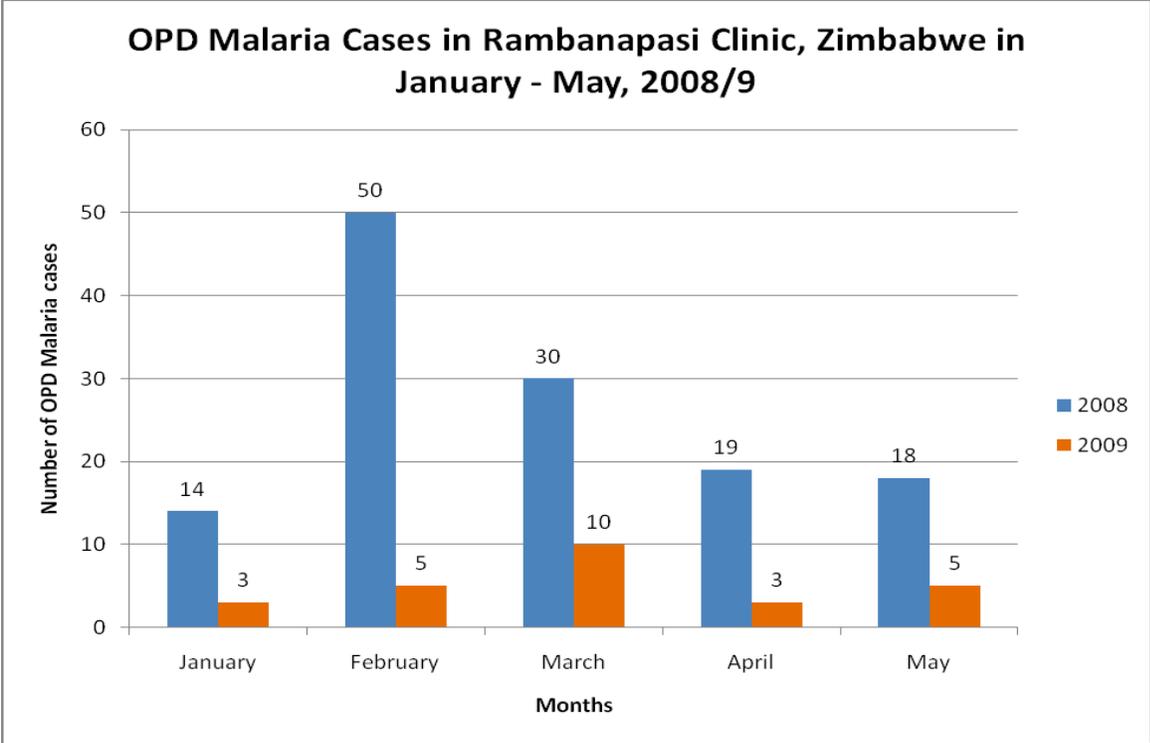
#### **4. Church in holistic life-saving approach**

Mrs Belinda Chsanga, a mother of five children from the Central Diocese in Zambia, has benefitted from LLINs from the *Netsforlife*® program in her community. She was visited by the Program Manager of the Central Diocese and some malaria agents to monitor the utilization of LLINs and also to distribute and hang nets at the new sleeping spaces that she has which were identified in the previous visit by the malaria agents. She expressed her profound gratitude to the Anglican Church/Episcopal church and by extension to all the donors of the *Netsforlife*® program and stated “Tukotota ichilonganino ca Anglican twalukumona kwati umulimo wa Church kushimikila bwaka pa sondo pano mwe mukotulangulukilako kumalwele Lesa amipale.” Which is literally translated as: “We are grateful to the Anglican Church; we thought that the Church’s duty is to preach the Word of God in the pulpit on Sundays but to our utmost surprise the Anglican Church has come to our aid in the prevention of diseases. God bless you”. She also added, ‘before receiving the LLINs I used to suffer from malaria a lot of times which used to make me fail to work in the fields and look after my children well. My children also used to suffer from malaria frequently and they used to miss school a lot. However since I received the mosquito nets, I have not suffered from malaria at all because I always sleep under the mosquito

nets and my children are also enjoying very good health. Since then, they no longer miss school and this has improved their performance at school. I am very grateful to the Anglican Church for the work that is being done and I would like you to continue working as the work you are doing is saving a lot of lives”.

## **5. Reduction in OPD Malaria Cases**

During a visit to Zimbabwe for field monitoring and capacity building, the program team had the opportunity to interact with officers in charge of the clinics that serve the localities. At one of the health centers, Chiwenga health centre, the nurse in charge, Mrs. Matimba, was full of praise for the *Netsforlife*® program as she had recorded less malaria cases (about 50% reduction) and attributed this to the success of the *Netsforlife*® program. At another health post, Rambanapasi clinic, the nurse in charge also indicated that malaria cases had drastically reduced and they only record about one or two cases of malaria per month. The team observed the registers at the two centers, comparing malaria reported cases for similar months in 2008 to 2009 and there was about 80% and 50% reduction in malaria reported cases in Rambanapasi and Chiwenga health centers as per the figures below.



## Photo Gallery



*Role Play on various ways of hanging mosquitoes nets by malaria agents in Ihite community, Diocese of Aguata, Nigeria*



*Drama on the proper use of LLIN, Upper East Region, Ghana*



*Consistent and proper use of LLINs, Builsa district, Upper East Region, Ghana*



*LLIN beneficiaries; Mahama Issaka and wife, Nafissa Issaka and their son.*



*Children performing at World MALARIA Day in Mandu-Bo District*



*School sensitization at Gobaru Secondary School, Bo district, Sierra Leone*



*R C Primary School Mandu – Bo District, Sierra Leone*



*Households with LLIN hanging on four chairs; children sleep in the middle of the arrangement, Cohane community, Mozambique.*



*Nets hanging at sleeping places, Ligogo locality, Inhambane province, Mozambique*

## APPENDIX 1

### A. List of Institutions/Consultants for the Evaluation

Country	Name of Lead Consultant	Email Address	Name of Institution
Angola	Paulo Manuel	[REDACTED]	Program Department, Diocese of Angola
Botswana	Dr. Tshepho Sethunya Mosime	[REDACTED]	University of Botswana
Burundi	Ir André BIZOZA	[REDACTED]	Independent Consultant
DR Congo	Paul Mansiangi	[REDACTED]	University of Kinshasa School of Public Health
Ghana	Dr. James Akazili	[REDACTED]	Navrongo Health Research Centre (NHRC)
Guinea	Moussa Sanoh	[REDACTED]	Independent Consultant
Kenya	Rose Okwako	[REDACTED]	Leadership and Development Initiative Consultants
Liberia	Jonathan Enders	[REDACTED]	Liberian National Consultancy Firm
Malawi	Charles Chimombo	[REDACTED]	Chimombo and Associates
Mozambique	Stephen Daniel John Mungone	[REDACTED]	EJ: Estevao Joao/Consultation & Services
Nigeria	Edem Edem	[REDACTED]	Christian AID, Nigeria
Sierra Leone	Robert Sam-Kpakra	[REDACTED]	Independent Consultant
Tanzania	Gao John Gao	[REDACTED]	MEA Foundation, Tanzania
Uganda	Dr Henry S. Katamba	[REDACTED]	Pretium Solutions Uganda Limited
Zambia	Mwanza Nebert	[REDACTED]	Independent Consultant
Zimbabwe	Inocent Kaba	[REDACTED]	Zimbabwe Christian Aid, Masvingo, ZIMBABWE