

2009



## Assessment of Community Preferences and Acceptances for Use of Different Types of LLINs in Pakistan.

[ABSTARCT: The use Long Lasting Insecticidal Treated bednets (LLINs) has become one of the best choices of vector control for any malaria control program around the globe. Since 2004/05 Directorate of Malaria Control (DoMC) is promoting and scaling up the use of LLINs in the rural areas of Pakistan. But, informations on sleeping habits, use practices of LLINs that include washing, drying, storage, ownership and more important community feed back on preferences and acceptance for different types of LLINs is not fully known in country and urgently needed to formulate a strategic framework for scaling coverage and better use of LLINs. DoMC designed a community based cross-sectional survey in selected areas of Pakistan where LLINs have already been distributed to assess the community response and acceptability of LLINs. Selected communities will be divided in two main groups and will be provided polyester and polyethylene-made LLINs, within each group three subgroups will be defined and will be provided circular and rectangular LLINs separately while third subgroup will get both types of LLINs in each selected province. 20 households will also be selected in each province and will be provided untreated traditional bednets. A total 700 households will be selected in four provinces and FATA and will be provided different types of WHOPEs recommended LLINs donated by manufacturers. Data on demographic variables and other papmeters will be collected during both peak and low transmission period on a structured questionnaire on bi-weekly basis and also through Focused Group Discussion (FGD). During years 1, 2, and 3 LLINs will be re-collected to evaluate the long lasting efficacy under local usage condition. In long term it is expected that the study will generate new knowledge of community preferences and acceptance for different types of LLINs for scaling up the coverage of LLINs in country. The final recommendations of the study will also enable the national health planners and policy makers to formulate effective and community-friend strategic framework for up scaling the coverage LLINs in country for better management of vector-borne disease of public health importance.

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## Assessment of Community Preferences and Acceptances for use of Different Types of LLINs in Pakistan



**Directorate of Malaria Control**

**Ministry of Health-Islamabad**

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## 1. Tital of Study

Assessment of community preferences and acceptances for the use of polyester or polyethylene made circular or retangular LLINs to fomulate community-frielndly scaling up strategy of LLINs in Pakistan.

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## 2). Review Committee

The project proposal will be reviewed by a panel of following technical experts who are also the members of Technical Advisory Committee on Malaria (TACOM).

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## Terms of Reference TACOM

1. National priorities, policies and guidelines.
2. Programmatic strategies, activities and gaps.
3. Processes and potential source of assistance to address program gaps
4. Research priorities, plans, ethical clearance, execution and dissemination.
5. Development of liaison and linkages with other potential partners including research institutions.

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## EXECUTIVE SUMMARY

The use of Long Lasting Insecticidal Bednet (LLINs) has become one of the best interventions for vector control around the globe. Since 2004/05 Directorate of Malaria Control (DoMC)-Pakistan is promoting the use of LLINs in Pakistan. During 2008/09 DoMC decided to scale up LLINs in the country and planned distribution of 2.1 millions LLINs out of which 0.8 million were to be distributed by its partners in the country focusing high risk districts of Pakistan.

Presently in Pakistan only polyester-made rectangular LLIN are being used. Other shaped nets e.g. circular or conical has not yet been tried Similarly polyethelene-made LLINs have also not been tried. Studies carried out in Afghan Refugees and in the local population has provided valuable information on socio demographic aspects of the communities using these nets. However, since only one type of nets have been introduced in the country (i.e. rectangular shaped polyester made ITNs/ LLINs), the community preferences/acceptances for other type of nets e.g. poly- etheline and or different shapes of nets is not locally known. This type of information is urgently required to develop/design strategies (that are community friendly) for scaling the LLINs in the country.

Keeping in view these findings and observations Directorate of Malaria Control (DoMC) designed a cross-sectional community-based survey in all four provinces and FATA during peak transmission and low transmission periods with the major objective to assess the community acceptance and preferences for polyester or polyethylene made circular and rectangular LLINs and to identify the major barriers and obstacle in scaling up the use of

LLINs with the overall goal to formulate rational strategic frame work for scaling up the coverage of LLINs in Pakistan. Two main groups A & B in selected communities will be provided polyester and polyethylene made LLINs and within each main group three sub-groups A-I, A-II and A-III and B-I, B-II and B-III comprised of 20 household will be identified and will be provided with circular and rectangular LLINs and third will get both types of LLINs. In each province 20 households will also be selected and will be provided untreated traditional LLINs as control, reaching the total number of households 700 in all four provinces and FATA.

Comprehensive information regarding use of LLINs will be provided at the time of distributions and Focused Group Discussion (FGD). Prior to survey FGDs will be held with community to understand the local terminology; local beliefs and practices for mosquito protection and use of bednets. For all experimental groups LLINs will be donated by manufacturers; however, they don't have any role in study design, questionnaire designing, field surveys for data collection, analysis, decision to publish, or preparation of manuscript.

Data will be collected using a structured questionnaire and through focused Group Discussions (FGD) to assess the demographic variables relevant to bed net usage including sleeping habits, washing, drying, storing practices, acceptance and preference for polyester and polyethylene made LLINs for shape (circular and rectangular), color, size etc. Indepth interviews will be conducted with health authorities and policy makers to indentify the barriers and obstacle that may hinder the implementation/promotion of this intervention. Informations will be collected from community regularly on bi-weekly basis throughout the study period that would cover both peak transmission (October-December) and low transmission (May-June) periods. A

A preliminary survey will also be conducted in the selected areas to assess the fever prevalence and community knowledge about malaria, bednets and LLINs. The designed questionnaire will be pre-tested and FGD and information collected will be further used to refine the questionnaire and other tools. During year 1, 2, and 3 a sample of the LLINs distributed to the communities will be collected to determine their long lasting efficacy through bioassay test after use in local settings. Data will be compared among all six study groups to understand community knowledge, acceptances and preferences towards different types of LLINs. The data will also be analyzed to find out any differences between two transmission periods so as to evaluate the utilization rate.

It is expected that the study will generate new knowledge on community acceptance and preference for different types of LLINs and their rate of utilization in different seasons. The outcome of this study will inform the national policy review and refine the existing strategies for further scaling up and monitoring the implementation of LLINs in the country.



## 1. Background

Development of Long Lasting Insecticidal Bednet (LLINs) has eliminated the need of retreatment of nets. The use of LLINs has become a major breakthrough in malaria prevention in all malaria control programs around the globe (Guillet et al., 2001; WHO 2002). Currently the use of LLINs is one of the three main strategies promoted by Global Malaria Program of WHO, while other two include indoor spraying, diagnosis and treatment of patients for parasite control.



*"LLINs are factory-treated bednets made with netting material that contain an insecticides either incorporated into or coated around fibres, which resist multiple washes (up to 20 WHO standard washes) and maintain their biological efficacy for personal protection without re-treatment as long as the life of net itself i.e. 3 years for polyester nets and 5 years for polyethylene nets"* These LLINs work in two ways i.e. by impeding access of infected mosquitoes to humans at risk (Reducing man-vector contact: personal protection) and by killing malaria vectors which are in contact with the insecticide on LLINs (Reduction on disease load: community protection).

### 1.2 Impact of LLINs on diseases other than malaria

Due to their unique technology, LLINs are also highly effective against bedbugs, human lice, fleas, sand flies, spiders and cockroaches. However when LLINs are used on **small scale and incorrectly**, these will provide personal protection to individual users only. When a **high proportion** (universal coverage) of population sleep under bednets, there is a marked reduction in the disease transmission. The risk of getting malaria is also reduced significantly not only for LLIN the users, but for other community members also (spill over effect). It is well evident from many

studies that the regular use of LLINs has a significant impact on malaria disease transmission. For example,

- 20-30% reduction in child mortality saving Of 5-6 lives per year per 1000 children of age of less than 5 years around the globe.
- 23% and 33%. reduction of the incidence of low birth weight and miscarriages/stillbirths respectively.
- 10 times reduction of mosquito entrance rate in control houses than in houses with LLINs and 93% reduction in mosquito biting.
- Among mosquitoes found in the houses, 73% were dead in LLIN houses compared to 0% in houses with no LLINs.

Overall LLINs have averted around 50% cases of vector borne diseases in the world.

In line with the global RBM initiative, the national malaria control programme has recently decided to scale-up the implementation of LLINs as a key malaria prevention strategy in the country through public-private partnership.

To get the benefit from full potential, LLINs should be deployed on large scale giving more than 80% coverage of target population. Therefore


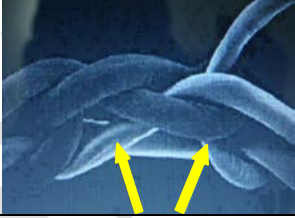
program objective should be full coverage of all population groups in all areas, where bednets are the method of choice for malaria control. In order to have maximum benefit from the use of LLINs there is a strong need to develop strategies for a high degree of community awareness for optimal use of LLINs which also maintain their efficacy for 3-5 years.



### 1.3 Types of LLINs

Presently LLINs are being manufactured from two different materials Polyester and Polyethylene and details of each LLIN has been given in

following table;

	Material	LLINs	Treatment	Technology	
1	Polyester (Multifilament) Soft	PermaNet 2.0	Deltamethrin	Coating	
2		PermaNet 2.5			
3		PermaNet 3.0			
4		DAWA Plus			
5		Interceptor	Alphacypermethrin		
6	Polyethylene (Monofilament) Hard	Olyset	Permethrin	Incorporation	
7		NetProtect	Deltamethrin		
8		DuraNet			

#### 1.4 Inadequate knowledge and rational of study

In Pakistan Directorate of Malaria Control and its partners have been promoting this intervention on large scale since 2004-5. Due to regular awareness campaign, this intervention is now getting popular among the communities. During last 5 years more than 2.4 millions rectangular ITNs and LLINs have been distributed in country focusing high risk districts of Balochistan, Sindh and FATA. However there is still no significant impact of malaria caseload in these provinces (DoMC 2006, 2007). Province-wise details of LLINs distributed in country during last 5 years have been shown in table 1. This reveals that Pakistan has become one of the leading users of LLINs in the world. However, systematic informations on community knowledge and practices regarding use of LLINs, including sleeping habits, washing, drying, storing, owership and level of acceptance and preferences for different types of LLINs is is not fully understood which is urgently needed for designing a community-friendly LLIN promotion strategy. in Pakistan. Disease Health Survey (2006) indicated that there are only 1.75% households using bednets which is extremely low (DHS, 2007). The results of the survey conducted in October 2007 in Pakistan reveal that 87% non user of LLINs did not sleep under LLINs last night just because of difficulty in

instalation due to lack of fixing materials (sticks, ropes etc) (DoMC, 2007). Similarly the results of survey conducted in FATA in 2007/08 also showed significant gaps in the knowledge of community about the use of LLINs (Shaista, 2008). However, studies conducted in Sri lanka showed a significatly higher rate (94.5%) of preference for circular/conical LLINs as compared to rectangular nets (36.8%). Out of 277 HH having rectangular 63.2% (n=175) did not like this shape, while out of 477 HH haing circular LLINs 94.5% (n=451) like circular LLINs (Fernando et al., 2008). Major reason identified for not using LLIN was difficulty in finding the marial for its instalation (Das et al., 2007). Another study conducted in India showed higher rate of utilization of polyester as compared to polyethlene due to its softness (Das et al., 2007). Higher Itching and sneezing problems (33% and 22% respectively) were noted in case of polyethlene as compaered to polyester (18% and 12%) made nets respectively. However, higher reduction in mosquito bites were observered in case of polyethelene (85%) than polyester (73%) nets. Prakash et el., (2008) reported that 77% households wash their LLINs on monthly basis while which is contrary to the WHO recommended guidelines for washing (i.e. frequency at 3-4 months not 20 washes



during life time of LLIN). Small suvery conducted in Balochistan and Sindh (2007) showed that 62% HHs wash their LLINs on biweekly basis which resulted in the reduction of the efficacy within 2-3 months inseed of 3 years. Almost 100%

households did not know about circular LLINs. However, when they were briefed about circular LLINs, 100% non-users showed interest towards use of circular nets (DoMC, 2007). Various documents of WHO mentioned that polyethelen made LLINs have 5 years life while polyester made LLINs have 3 years (Guillet, 2002; WHO, 2001, 2002, 2003 2004, 2005).

Keeping in view these facts and figures the Directorate of Malaria Control (DoMC) has developed this current project. The key objectives are to assess the community knowledge, acceptance and preferences towards the use of polyester or polyethylene made circular and rectangular LLINs; to identify barriers that hinders the promotion and implementation of LLINs. Overall goal is to formulate and implement a community-friendly strategy for scaling up the use of LLINs in Pakistan.

### **Specific Objectives**

To establish a baseline for community knowledge, acceptance and preference towards different types of LLINs in rural community of Pakistan.

- To evaluate the practices of LLINs use at community level.
- To identify the barriers and obstacles that may hinder the scaling up of LLINs use in the country.
- To assess physical strength and long lasting efficacy of different LLINs types in local settings for future vector control strategy.

The secondary objectives will be;



- To identify the mechanisms for effective distribution of LLINs in rural community.
- To enhance the capacity and skills of district level malaria staff for distribution and monitoring of LLINs.
- To analyze data and write report.
- To scale up the LLINs distribution strategy in other parts of the country in light of experience gained during the pilot study.

### 1.5 Outcome of the study

The proposed research will be carried out in line with the current national malaria control policy. The study would provide baseline on several key parameters of LLINs use. The study will also provide necessary information on community acceptance, preferences and obstacles that may hinder the use of LLINs. It is expected that the newly generated knowledge from the community will provide baseline information which will enable the national health planners and policy makers to;

1. Design evidence-based strategic decisions and policy for scaling up the use of LLINs in country.
2. Recommendations and promotion of community preferred LLIN (in term of material and shape, color and size) in the local socio-cultural settings
3. To identify the barriers/obstacles that may hinder the promotion and implementation of LLINs

4. To develop public-private partnerships model for scaling up of bed net use in Pakistan.

Overall, it is expected that the outcomes and final recommendations of proposed research will help inform the national policy and in developing a comprehensive future community-friendly LLINs promotion strategy. These changes are essential to make a significant contribution to ameliorate malaria in Pakistan

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## 2. Materials and Methodology

More details on project and its questionnaires can be obtained from Muhammad Mukhtar, Senior Vector Control specialist & Incharge R&D Wing of Directorate of Malaria Control, Ministry of Health.

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