1.0 Executive summary

The Marigat District Malaria prevention project is the latest engagement to be completed by the Organization. The project purposed to educate the community about the causes and symptoms of Malaria and the importance of using insecticide treated mosquito nets. The bottom line was to empower the community to diminish the incidence of Malaria prevalence in their area. This was found unavoidable because, besides being a deadly disease that kills over 26,000 children a year in this region, malaria perpetuates the cycle of poverty in affected communities; prevents children from going to school and farmers from the fields. Ultimately, it costs endemic countries a fortune every year as a result of lost economic productivity, foreign investment, tourism and trade.

HMDS - the implementing agency - collaborated fully with Government line Ministry officials of Health, education and Administration i.e. the Marigat District Public Health Officer, Malaria control officers, area Chiefs and their Assistants, to implement the project. Co-operation from primary school heads, local leaders and community residents in general was high and effectively enhanced the successful implementation of the project. All these collaborators are now a dependable pillar for the post activity implementation sustainability.

During the nine (9) months - April to December 2011- implementation period, the project targeted pregnant women, mothers with under five (5) year infants, school going children (5-14yrs old), the aging – because of their low immunity and community residents in general. Altogether 5,342 residents benefitted through distribution of 3,600 treated mosquito nets and 1,908 participated in Malaria preventive education campaigns and environmental clean-ups. Now they are enjoying ample sleep under treated mosquito nets and 'have the power' to destroy breeding grounds for the Malaria-causing anopheles mosquitoes.

2.0 Project background

Malaria is a deadly tropical disease in sub-Saharan African and remains the highest killer in Kenya. The country lies wholly in the tropics and as in other Sub-Saharan nations; it is infested with the Malaria causing mosquito type known as the female 'anopheleses. Research has shown that the female anopheles mosquito sucks human blood in order for it to fertilize. But in the process of sucking the blood, the mosquito injects Malaria causing plasmodia in the human bloodstream which quickly multiplies to cause the deadly disease. Up to 8 million people are infected every year and 20% of the deaths are children under the age of 5 years. In 2009, 225 million people were infected with malaria and 781,000 died, according to W.H.O report – (*Source Daily nation 22nd August 2011, page 20.)*

HMDS undertook to implement this Malaria prevention project in seven locations of Marigat District namely; Salabani, Loboi, Sandai, Illingarua, Endao, Ngambo and Araban. The area is marginal and humid, lying between Lakes Baringo and Bogoria. The climatic conditions are conducive for mosquito breeding and infestation and make malaria, an ever-present danger and threat to human life. Malaria takes its heaviest toll on poor people, who are unable to access affordable treatment and prevention tools, as the case with the project area.

Only a handful of health Centres exist in the District where average distances between the facilities are 30Kms. They are however, under-utilized due to lack of qualified personnel and equipment leaving the community very exposed to prevalent ill health factors which include Malaria, Upper respiratory track infection (UTRI) and Pneumonia. Community residents not only needed treatment but, more importantly prevention knowledge, facilities and know-how.

3.0 Expected results/Outputs

Given the three (3) broad objectives, the project expected to realize the following outputs:-

1. **Education and awareness campaign**
    - Knowledgeable and informed community members about causes and symptoms of malaria disease.
    - Improved management of the Malaria infections.

1. **Distribution of insecticide treated mosquito nets**
    - 3,600 residents to benefit from the distribution of 3,600 insecticide-treated mosquito nets.
    - Many household members sleeping under treated mosquito nets.

- Reduced malaria infections and prevalence in the community.

1. **Environmental clean-up and management**
    - Stagnant water drained and puddle holes filled up
    - Mosquito breeding grounds i.e. bushy surroundings cleared, unwanted structures and containers destroyed and removed.
    - Clean and well kept residential and public institutional compounds.
    - Responsible and healthy living standards in the community.

The beneficiaries included pregnant mothers, mothers with under 5year infants, children between 5-14 yrs of age and the elderly members of the community. The Government, through the Ministry of Health implements a programme under which pregnant mothers and mothers with under 5years infants are provided free insecticide treated mosquito nets during ante-natal and post-natal visits to public health facilities. School going children (5-14years old) and the elderly are however not covered. Our baseline study revealed that these categories are vulnerable too and deserve attention. For this reason children from Salabani (232), Loboi (244), Sintaan (303) and Sandai (52 – Boarding girls and 183 day scholars), Ngambo (362), Endao (95), Illingarua (298) and Loberer (302) schools received insecticide treated mosquito nets, each. Other members of the community i.e. fathers and relatives in beneficiary households benefited from the project, indirectly.

4.0 Implementation strategies.

The project was implemented in seven locations (Nine centers) of Marigat District namely; Salabani, Loboi, Sandai, Ngambo, Illingarua, Endao and Araban. Local health facilities and primary schools by similar names and Ngambo, Illingarua, Sintaan primary schools were venues for awareness creation campaigns and mosquito net distribution activities. Environmental clean-up, bush clearing and stagnant water drainages were done in schools, homes and the community at large the implements were left with the community(chiefs) so that it can be a continues process.

a. Education and Awareness creation campaigns.

The purpose of the education and awareness campaigns was to educate the community on the causes and symptoms of malaria, the treatment and use of insecticide treated mosquito nets. Collaborating with local officers of the Ministry of Health, HMDS organized and conducted education campaigns on causes of malaria creating awareness on prevention measures. Dr. Laban - the District Public Health Officer (DPHO and Dr. Puis Biwott - in charge of the Malaria project in Marigat district, played important supportive roles during the implementation of the project.

First, they dealt with assumptions, beliefs and myths about the causes of Malaria. Participants came up with several thoughts including the following:-

- Malaria is caused by too much rainfall, Fish eating and Maize plantations.
- Eating too much sugar or honey.
- Eating food that is not properly cooked.
- Eating dirty mangoes
- Change of climate
- Eating too much of fruits from the forest.
- Drinking too much milk
- Some insects that bite – not one in particular

Well, the need to clear the confusion was obvious. The doctors explained the real cause of Malaria stating that it is caused by a female mosquito known as the anopheles, which bites and sucks human blood in order for it to fertilize. The insects breed in stagnant water and hide in dark areas.

The officers informed, educated and created awareness among community members, teachers and local leaders who learned that the only way Malaria disease is and can spread is through biting of humans by the female anopheles mosquito before it can fertilize. They were taught to be on the look out for the following symptoms of malaria attack:-

- Vomiting,
- Fever,
- Joint pains,
- Headache,
- Fatigue
- High body temperatures/or coldness,
- Loss of appetite among children and adults,
- Poor breast feeding among babies

Regarding Malaria prevention, he urged beneficiaries to observe and do all of the following:-

- Use and sleep under insecticide treated mosquito nets, always
- Clear the surrounding bushes in the home or school compound
- Drain all stagnant water in the home or school compound and in the community at large.
- Ensure enough lighting in the house.
- Destroy and/or remove all unwanted structures which serve as mosquito breeding containers and areas.
- Maintain clean homes and school compounds.

Attendance for Malaria education and awareness creation.

No.	VENUE	MALE	FEMALE	TOTAL
1				
1.	Loboi Primary School	38	193	231
2.	Sandai Primary School	147	332	479
3.	Salabani Primary School	120	135	255
4.	Ng'ambo Primary School	66	225	291
5.	Illingarua Primary school	36	123	159
6.	Sintaan Primary school	42	108	150
7.	Endao Primary school	24	50	74
8.	Araban Location	38	76	114
9.	Loberer Primary school	55	100	155
	TOTAL	**576**	**1,332**	**1,908**

It was observed that more women participated in the trainings than men during the exercise in the nine centres that the training was conducted.

Demonstration by Dr. Jackson during malaria education at Ngambo location.

Malaria cases have reduced in schools due to provision of insecticide treated mosquito nets. During the exercise HMDS distributed foodstuff to the participants due to famine in the area.

b. **Distribution of treated mosquito nets.**

Altogether, the project planned to distribute 3,600 insecticide treated mosquito nets to target Marigat communities. Before distribution however, HMDS organized awareness creation sessions among beneficiaries on the types of nets and how to use them. Dr. Laban was on hand again to provide the necessary information. He informed the beneficiaries that mosquito nets could be identified based either on shape (e.g. round top or rectangular – 4 corners); colour (e.g. white, blue, green, pink) or texture (e.g. rough or soft). He advised participants to use properly packaged nets and to hang them in their rooms (houses) for at least 24 hrs before sleeping under them. This helps the insecticide to spread and keep the marauding mosquitoes away from the room/house. Sleeping under the nets immediately, may cause itching to the body for four or more days. Before sleeping the net must be properly tacked in all the four corners of the bed to keep mosquitoes away.

He taught them about the two insecticides commonly used to treat the nets i.e. a permanent one that lasts for five years and up to 21 washes and a temporary one that lasts only six months. For this project, HMDS supplied the 'Kings Collection' brand which lasts for five years and 10 washes. The net supplied were size 190cmx190cmx180cm with the following features:-

- Rectangular net
- Deltamethrin Insecticide 55mg/m2
- 100Denier- Bursting strength410 Kpa
- 100% polyester with filament fibers
- Long lasting insecticide
- WHO standards specifications.

There were demonstrations of how the nets should be hanged and used by the beneficiaries at all supply venues. The facilitators encouraged beneficiaries to repeat the demonstration so that it is clear that they understood how to

use the nets in their homes. School children from Salabani, Loboi, Sandai, Ilingarua, Ng'ambo, Sintaan and Loberer (boarding wing) schools received the nets too.

Sandai Girls'boarding receiving insecticide treated mosquito nets from Madam Josephine of HMDS.

Table 1. Beneficiaries: School Going Children

	School	Class/Grade	Girls	Boys	Totals
1.	Salabani Primary	Pre school	37	45	**82**
		Class I	17	20	**37**
		Class II	21	19	**40**
		Class III	25	13	**38**
		Class IV	10	25	**35**
2	Loboi Primary	Pre school	17	23	**40**
		Class I	24	17	**41**
		Class II	24	26	**50**
		Class III	25	16	**41**
		Class IV	35	37	**72**
3	Sandai Primary	Girls Boarding	52	0	**52**
		Pre school	23	28	**51**
		Class I	13	15	**28**
		Class II	20	13	**33**
		Class III	21	12	**33**
		Class IV	24	14	**38**
4.	Illingarua Primary	Pre school	47	43	**90**

		Class I	27	25	**52**
		Class II	28	27	**55**
		Class III	25	26	**51**
		Class IV	25	25	**50**
5.	Ng'ambo Primary	Pre school	35	38	**73**
		Class I	32	26	**58**
		Class II	27	25	**52**
		Class III	67	49	**116**
		Class IV	31	32	**63**
6.	Sintaan Primary	Pre school	41	26	**67**
		Class I	24	23	**47**
		Class II	24	37	**61**
		Class III	35	26	**61**
		Class IV	28	39	**67**
7.	Loberer Primary	Pre school	33	45	**78**
		Class I	30	27	**57**
		Class II	23	33	**56**
		Class III	26	31	**57**
		Class IV	28	26	**54**
8.	Endao Primary	Pre school	16	14	**30**
		Class I	25	15	**40**
		Class II	15	10	**25**
	Total		**1,080**	**991**	**2,071**

Table: Gender

S/No.	**Pre-school**	**Class one**	**Class Two**	**Class Three**	**Class Four**	**Boarding**	**Totals**
Girls	249	192	182	224	181	52	1,080
Boys	262	168	190	173	198	0	991
Totals	511	360	372	397	379	52	2,071

Indirect beneficiaries included mothers and fathers for the children in Pre-schools and class one totaling 1,742parents sleeping with these children under the treated net. Altogether beneficiaries of the nets are 5,342 (3,600 + 1,742).

Beneficiaries: Other groups.

S/No.	**Centres**	**Children Bellow 5yrs**	**Elderly**	**Totals'**
1.	Salabani	86	-	**86**

2.	Araban	257	-	**257**
3.	Loboi	373	-	**373**
4.	Sandai	592	-	**592**
5.	Ngambo	-	36	**36**
6.	Illingarua	-	38	**38**
7.	Sintaan	-	42	**42**
8.	Loberer	-	41	**41**
9.	Endao	-	64	**64**
	Totals	**1,308**	**221**	**1,529**

C. Environmental clean – up

The environmental clean-up involved:-

- Bush clearing in home and school compounds
- Drainage of all stagnant water in homes, school compounds and community at large
- Destruction and remove of all unwanted structures and containers, which serve as mosquito breeding places
- Maintenance of cleanliness in homes and school compounds

The project provided hoes, machetes, slashers and rakes and facilitated demonstration of all the above approaches with beneficiary participation. The tools were left with the communities to continue the process under auspices of the area chief.

Community members during bush clearing and drainage exercise

5.0 Outputs and Impacts

No.	Intervention strategies	Outputs	Impact
1.	Education and awareness creation campaigns on prevention of Malaria	1,908 community residents participated in the campaigns.	a. Knowledgeable communities able to prevent breeding and

	disease.		infestation of Malaria causing mosquitoes. b. Diminishing malaria occurrence and prevalence. c. Responsible and healthy living in the community.
2.	Distribution of insecticide treated mosquito nets.	3,600 residents: children – both the under 5s and between 5-14yrs, fathers and mothers sleeping under treated mosquito nets provided by the Project.	
3.	Environmental clean-up i.e. bush clearing, stagnant water drainage and destruction of structures and containers aiding mosquito breeding.	Home and school compounds changed to clean and smart looks in nine centers.	

6.0 Collaboration

HMDS enjoyed a supportive working relationship with the line Government Ministry of Health and the Department of Administration in the office of the President. The Government officers right from Dr. Elizabeth Juma - the Head of Malaria Control Division in the country, to local based personnel i.e. Dr. Masongo, Dr. Pius Biwot - in charge of Malaria in Marigat Hospital and Dr. Laban - the District Public Health Officer (DPHO) of Marigat District Hospital, and the area chiefs and their Assistants, all formed a great team to work with. The local personnel will continue to provide advisory support to the communities and enhance residents' contribution to their own healthy living circumstances.

The local community and their leaders were co-operative and collaborated fully during project implementation. We believe that their co-operation enabled them to learn enough to go on with post project activities.

7. 0 Conclusion and Recommendations

The Marigat District Malaria Prevention project was brief (only 9 months), but performed satisfactorily well. The Medical personnel in the area highly appreciated the HMDS intervention and came out to support the initiative fully. Given the remoteness of the area both health personnel and facilities are limited, giving quite some credit to the project. It anticipated that the education and awareness created among community members and willingness shown by the local based medical officers, the project activity will be sustained for enhanced healthy living of all the people in the area.

Our considered opinion is that:-

1. The Government considers posting more health personnel in the area to strengthen the fight against the now identified highly dangerous 'highland Malaria' strain.
2. The public health department should appoint competent members of the community to be organizing and ensuring that residents adhere to and perform recommended procedures to prevent mosquito breeding and infestation in the community. This would diminish Malaria infection and prevalence in the community
3. To cut down on the number of malaria death among pregnant mothers and the under 5year children, more education is recommended to community members in the area of treatment.

8.0 Appreciation

Help Mission Development Services is very encouraged by the collaboration and support it has continued to receive from line Government Ministries and officers, sympathizers with the kind of work our Organization is involved with and with the co-operation from beneficiary communities.

During implementation of this Malaria prevention project, the community was very co-operative and we register our heart felt thanks for their willingness to participate fully in all project activities. We feel indebted to the Ministry of Health officials for their willingness to support the project right from office to the filed. Our deep thank you go Dr. Elizabeth Juma - Head of Malaria Control Division in the country - Nairobi, Dr. Pius Biwot - in charge of Malaria

control in Marigat Hospital and Dr. aban - the District Public Health Officer (DPHO) of Marigat District Hospital and Dr. Jackson of Marigat District Hospital .

We thank the Administration personnel i.e. the Chiefs and their Assistants in Marigat District for organizing the residents and standing with us as we distributed the mosquito nets and cleared the bushes to prevent the infestation of mosquitoes in the community. We thank all local community leaders, the Headmasters of schools in the project area and all community members who willingly participated in the success of this project. Thank so much.

Our very profound thanks go to Dr. Satapati and Other development partners who have stood with us over time just to ensure that we work successfully through this and other project there before, providing for the needy in our country Kenya. We are and shall always be grateful to you for your big and noble hearts towards the Kenyan people. We thank and commend you to the Almighty God for more and more blessings.

Finally, thanks to Organization's staff for their time and willingness to work often beyond ordinary working time for the sole purpose of achieving the objects of this project and reaching to those who most were in need of the support in entire areas e.g. Araban. It was a commendable job.

Personnel

HMDS operated with five fulltime staff

1. Ms Josephine Sindavi - Executive Director
2. Mr. Samuel Opanda - Program Co-ordinator
3. Mr. Obed Tsuma - Head of Finance & Administration
4. Mr. Nick Luvai - Field Operations officer
5. Ms Leah Nanjala - Office Administrator
6. Mr. Samuel Siwa - Security