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Emergency Medical Support, Epidemic Malaria, Kisii and Gucha Districts, Nyanza Province, Kenya

OFDA FINAL REPORT

June 30th 2000

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I. EXECUTIVE SUMMARY

Final Report

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Programme Title:	Emergency Medical Support, Epidemic Malaria, Kisii and Gucha Districts, Nyanza Province
Country:	Kenya
Disaster/Hazard:	Highland Malaria Epidemic
Time period covered:	28 th September – 31 st March 2000

Summary of activities undertaken and progress made in reporting period: In June 1999, Merlin responded to media reports of an outbreak of highland malaria with associated high mortality in Nyanza province, southwest Kenya. At the request of the Ministry of Health in Nairobi, a three-person Merlin team arrived in Kisii District on 3rd June 1999 to carry out a rapid assessment. On 17th June 1999, two additional personnel arrived and extended the assessment to Gucha District. A rapid cross-sectional malaria prevalence survey performed in both districts from 23-25 June 1999 revealed that up to 45% of the total population was infected with malaria. The epidemic was noted to be affecting all age groups as results among children and adults were similar.

Hospital admissions were 300% over normal throughout both districts. Recorded deaths were higher than normal. Poor organisational management, case management, inadequate surveillance systems, inappropriate drug prescribing, lack of community mobilization and a lack of understanding of the public health aspects of malaria control were contributing to the crisis. The assessment concluded that the prevalence of malaria was greater than the expected seasonal rates and that most people with malaria remained without appropriate treatment, being unable to access effective health care and unaware of its importance. A further contributing factor identified, was the unusually high

temperatures during 1999, probably due to after the effects of El Nino, leading to increased mosquito breeding and increased malaria transmission.

Merlin began providing emergency medical support to the populations of both districts on 28th June 1999. Since the epidemic waned in September, Merlin has concentrated on preventive activities such as continued community health education and the establishment of community based insecticide treated bed net (ITN) distribution schemes. Time has been spent with the District Health Management Teams (DHMT's) of Kisii and Gucha, to develop their malaria surveillance systems and emergency response capacity and further equipping of rural health facilities.

September – November 1999

- Supply and transport of essential drugs
- Supply of case management guidelines to health staff
- Secondment of staff and supply of equipment to rural health facilities
- Provision of four mobile teams to work in remote communities providing first line malaria treatment and health education and residual spraying of houses
- Collection and analysis of epidemiological information from health facilities in Kisii and Gucha (private, governmental and missionary institutions)
- Commencement of training programme for 32 community groups to become part of an insecticide treated bed net (ITN) distribution scheme

December – January 1999

- Community health education provided through schools, chief's baraza's and community groups
- Staff training for new programme of intensive residual spraying (IRS) of households to prepare for the 2000 malaria season and identification, with the MoHs, of areas to be targeted, based on experience of malaria in 1999
- Continued equipment supply to health facilities
- Completion of training of 31 community groups joining the ITN scheme and distribution of bed nets for vulnerable community members
- With the DHMTs of Kisii and Gucha, provision of education for staff on the National Malaria Guidelines

February - March 2000

- Community health education given at chief's baraza's, schools and to community groups during the IRS campaign
- IRS campaign in targeted areas of both districts
- Epidemiological records collected, analysed and reported on from health facilities in Kisii and Gucha
- Continued provision of materials and equipment to health facilities
- Follow up of community groups in the ITN scheme

OBJECTIVE #1: To reduce avoidable morbidity and mortality due to malaria of vulnerable communities, by increasing the diagnostic and treatment capacity of all MoH district health facilities

Merlin

- employed 15 people who were seconded to health facilities across Kisii and Gucha to assist case management of malaria during the malaria epidemic of 1999
- transported drugs and other essential supplies to health facilities especially in remote areas
- provided a simple one page laminated summary of the Kenya National Malaria Guidelines for all clinical staff in rural health facilities and training in its use
- provided two tents and beds for use by Ogembo District Hospital (Gucha) to expand its capacity during the epidemic
- provided a further 15 beds at Nduru Rural Health Demonstration Centre (Gucha District) and a further 28 beds across both districts, following joint assessment of need with the MoHs, including in Marani Rural Health Demonstration Centre (north Kisii)
- provided further medical and other equipment to both district hospitals and rural health facilities, following joint assessment, enabling four new dispensaries to open and other facilities to operate more effectively
- employed an officer with a motorbike to collect malaria reports from rural health facilities who assisted staff to report accurately, entered data onto computer and produced regular reports for the MoH, Merlin and at national level.
- provided training to clinical and records staff unfamiliar in the methods or purpose of reporting and surveillance

OBJECTIVE #2: To improve access to malaria treatment for isolated and vulnerable communities

Merlin

- employed staff to run four mobile health teams at the height of the malaria epidemic in June – August 1999 to provide first line diagnosis and treatment of malaria and health education in remote areas
- trained 32 groups in 1999 and a further 20 groups will be trained in simple malaria prevention, treatment and control including impregnation and sale of insecticide treated mosquito nets. Some of the groups trained in 1999 are now dispensing first line malaria treatment following further training by the MoH in March 2000
- transferred 331 seriously ill patients to hospital during the 1999 epidemic
- has worked with MSF-F to support development of decentralisation of blood transfusion facilities to Keumbu Health Centre (Kisii) and Ogembo District Hospital (fridges and blood bags have been donated by Merlin)
- provided summaries and comparisons of reported cases of malaria during 1999 and 2000 and, where available, from previous years.
- Laid the groundwork for future development work with the community, MoH, local administration and education services on the major cause of illness and death in Kisii and Gucha; malaria.

II. PROGRAMME OVERVIEW

A. THE GOAL AND OBJECTIVES OF THE PROGRAMME AS OUTLINED IN THE PROPOSAL

Overall Project Goal: To reduce the number of people with malaria, especially severe and complicated malaria, including reduction in malaria related deaths, by the provision of emergency medical support to vulnerable populations severely affected by epidemic malaria in Kisii and Gucha Districts, Nyanza Province, Kenya

Objective #1: To reduce avoidable morbidity and mortality due to malaria of vulnerable communities, by increasing the diagnostic and treatment capacity of all MoH district health facilities

Specific Objectives:

- to work with the District MoH teams to ensure technical support to existing health facilities
- to facilitate the supply and distribution of essential drugs and case management guidelines
- to expand treatment capacity at Ogembo hospital, Gucha district, by 75 beds by providing emergency tented treatment wards, and providing additional health staff
- to provide additional treatment capacity of 35 beds at Nyamache Health Centre, Gucha District
- to provide additional treatment capacity to one other strategically placed treatment facility in northern Kisii
- to co-ordinate with MSF-France and donor agencies, to ensure additional temporary treatment capacity is established at Kisii hospital
- to reinforce epidemiological and entomological information systems and monitoring in both districts and facilitate the collection of data from district health facilities
- to support the MoH in the analysis of epidemiological information

Objective #2

To improve access to malaria treatment for isolated and vulnerable communities

Specific Objectives:

- to provide 4 mobile malaria teams to provide health care to vulnerable communities in Kisii and Gucha Districts (2 in each) with limited access to existing MoH facilities
- to identify community representatives in key locations, capable of being trained to provide a first-aid level malaria treatment service, and to identify cases requiring referral to treatment centres.
- to ensure referral of severe anaemia cases to hospital from outlying inpatient facilities by public transport
- to collect information including case reports, deaths, treatment, drug management records and drug orders from all district health facilities

B. PROFILE OF TARGETED POPULATIONS

Date: 30-06-00

Country: Kenya

Total Target Population: 1,030,873

ADMIN 1	ADMIN 2	PLACE	LAT/ LONG	SECTOR	START	END	TARGET POP
Kenya	Kisii District	Kisii Municipality	0° 39'S 34° 46'E	Health	28/9/99	31/3/00	Resident population
Kenya	Gucha District	Gucha Municipality	0° 39'S 34° 46'E	Health	28/9/99	31/3/00	Resident population

The target population is the inhabitants of Kisii and Gucha Districts, Nyanza Province, in the highlands of western Kenya.

Nyanza Province is one of the most densely populated provinces in Kenya^{1,2}. The Districts of Kisii and Gucha are rural and agricultural covering 1,300 kms². The estimated populations are 516,472 (Kisii) and 460,531 (Gucha). The population growth rate is 2.75%³ per annum. Population density is estimated at 766-people km², which compares with the Kenya average of 37-people km². Such overcrowding provides an ideal environment for the rapid transmission of malaria to epidemic proportions.

In Nyanza province, stable malaria occurs at altitudes of 300m – 1700m, but in highland regions (1700m – 2500m) such as Kisii and Gucha, malaria appears in unstable/epidemic forms. Malaria is the most common cause of outpatient attendance and inpatient death in these districts. It is estimated that in the last few years, malaria accounts for 33.2% of all deaths reported by health facilities, and for 60% of all under-five mortality in Kisii District⁴. During the initial assessment in early June 1999, the MoH/ Merlin team performed a random cross-sectional malaria community prevalence survey⁵. The study revealed variable, but mainly high infection rates of *falciparum* malaria among the population (up to 44% of total population, and up to 71% of children under five years, in some areas). An entomological survey carried out at the same time, found the predominant mosquito to be *Anopheles gambiae* (87% of examined mosquitoes), 26% of which were carrying malaria sporozoites.

Rainfall in Kisii and Gucha is high (over 1500mms per annum). This results in lush vegetation and many pools of stagnant water during the rainy season. Brick making and soapstone carving (local

¹ Kisii District Development Plan 1997 - 2001

² Master Plan of Operations, UNICEF and GoK Country Programme of Co-operation 1999 - 2003

³ Kisii District Development Plan 1997 - 2001

⁴ Japan International Co-operation Agency Final Report on Study on Strengthening the District Health System in the Western Part of Kenya 1998

⁵ Following RollBack Malaria Guidelines.

industries) also leave pools of water in the quarry pits. These conditions are ideal for mosquito breeding. Due to heavy population density, crops are planted immediately adjacent to the houses, making bush clearance to reduce mosquito-breeding sites difficult. Cropping has also expanded to the previously thickly forested hilltops, the loss of which also supports increased breeding of the main vectors.

El Nino has contributed to malaria outbreaks in recent years as the heavy rains and temperature changes in 1997-1998 disrupted the usual seasonal pattern leading to a large outbreak in the early months of 1998.

Traditional beliefs of the cause of malaria (e.g. eating green maize, eating sugar cane) still prevail locally, which means people do not recognise the value of vector control activities or use of mosquito nets. People may not connect uncomplicated malaria with complicated malaria, believing that witchcraft or social unrest give rise to convulsions. People therefore delay (biomedical) treatment seeking until late in the course of disease leading to increased experience of complications and death.

Health services in Kisii and Gucha are far from adequate. Resources are scarce and what is available is neither prioritised nor organised according to health needs. The non-systematic introduction of a decentralized health system has not helped as the District Health Management Teams (DHMTs) have been given little budgetary control, no management training, have limited transport (so cannot adequately supervise staff in rural health facilities), and have minimal resources for continuing education. A good example of the shortcomings of the arrangements is the change in National Malaria Guidelines from chloroquine as first-line treatment to Sulphadoxine-Pyrimethamine (SP). Despite central agreement to the change in 1997, virtually nothing had been done about implementing this in Kisii and Gucha by the time of the 1999 outbreak.

Thus, due to high density in an area of unstable malaria, the Kisii and Gucha population is at high risk of illness, disability and death during annual malaria epidemics. The seasonal nature of malaria transmission prevents community acquisition of immunity so all age groups are at risk and may experience the severe consequences of malaria. The lack of knowledge about malaria, its cause, prevention and treatment, compound the adverse effects on the population, as do the poor organisation and infrastructure of the local health services. Merlin targeted Kisii and Gucha populations as these areas were thought by the Kenya Ministry of Health to be most and worst affected by the malaria crisis in 1999.

III. PROGRAMME PERFORMANCE

A. PROGRAM PERFORMANCE VIS A VIS THE PROGRAM OBJECTIVES

Results of Objective 1: *To reduce avoidable morbidity and mortality due to malaria of vulnerable communities, by increasing the diagnostic and treatment capacity of All MoH district health facilities.*

Specific Objectives:

- to work with the District Ministry of Health teams to ensure technical support to existing health centres and dispensaries
- to facilitate the supply and distribution of essential drugs together with diagnostic and treatment protocols

Merlin assisted the DHMTs of Kisii and Gucha in the transport of anti-malarial drugs, equipment and staff to rural health facilities. When there was a delay in the supply of drugs from MoH in Nairobi, Merlin provided small buffer stocks to bridge the gap.

Merlin assisted the DHMTs of Kisii and Gucha to educate health facility staff through the production and dissemination of one page summaries of the Kenyan National Malaria Treatment Guidelines laminated for easy reference. Providing this information was of particular importance because chloroquine was still contained in many of the MoH kits, despite the existence of known and widespread chloroquine resistant malaria in the area. The use of Sulpha/ Pyramethamine drugs is now the recommended policy for first-line malaria treatment in Kenya.

Since the end of the malaria season, Merlin and the DHMTs of Kisii and Gucha have spent time consolidating work commenced during the crisis including further donations to health facilities based on jointly agreed priorities. Equipment donated includes medical equipment e.g. for laboratory or outpatient department, and general goods such as; tables, beds, chairs, refrigerators (used to store vaccines), and a washing machine for the Ogembo Hospital laundry. Merlin also procured 10 Leica Galen III microscopes for health facilities based on a joint assessment of need between local MoH and Merlin. The microscopes function on both daylight and electricity and are for the following health facilities:

Table #1: Distribution of 10 Leica Galen III microscopes

Kisii	Gucha
Riana Health Centre	Ogembo (Gucha District) Hospital
Riotachi Health Centre	Nduru Rural Health Demonstration Centre
Marani Rural Health Demonstration Centre	Nyamache Health Centre
Ibacha Dispensary	Kenyenya Health Centre
Keumbu Health Centre ⁶	
Kisii District Hospital	

Delivery of the microscopes was delayed as they arrived without objectives and mirrors for use with daylight and not all health facilities have electricity. The health facilities receiving microscopes have also received basic laboratory supplies for diagnosis of malaria; Field Stain A & B reagents, microscope slides, oil immersion etc. Merlin commissioned refresher training for 20 laboratory technicians on use and maintenance of the new microscopes and diagnosis of malaria prior to their distribution.

A consignment of clinical books suitable for use by staff in rural health facilities was ordered for both districts.

Since the beginning of the year, and at the request of the MoH at district and provincial level, apart from the simple health facility rehabilitation and re-equipping detailed above, Merlin has concentrated on developing community based malaria control rather than support to case management. Medecins Sans Frontieres, France (MSF-F) came to the area for the epidemic period in 1999 (July to August) and returned again in January 2000 to work collaboratively with the MoH and Merlin. They have undertaken refresher training of all rural health facility staff, distribution of the Kenya National Malaria Treatment Guidelines booklet, further follow up in the various facilities and are preparing to cover any shortfall in Government drug supplies (this year financed by DFID for Kenya as a whole).

Through regular meetings and discussions, the DHMTs of Kisii and Gucha, MSF-F and Merlin have agreed respective roles and responsibilities to prepare for the 2000 malaria season. This has worked well and is supported by both NGOs and the MoH at central level.

⁶ Following further discussion and assessment within the MoH in Kisii they may decide that Ibeno Health Centre would benefit more as it only has one monocular microscope whereas Keumbu has a binocular microscope.

- **to expand, by 75 beds, the treatment capacity at Ogembo District Hospital, Gucha, through the provision of emergency tents for wards, and the provision of additional medical staff**

Merlin provided two Trigano tents to Ogembo Hospital after MSF-France withdrew in August 1999 from the area. Twenty folding hospital beds were also provided as well as anti-malarial drugs and other non-renewable goods. Merlin seconded five nurses to Ogembo Hospital to bridge serious personnel shortages.

One Merlin tent remains erected (albeit in a poor state of repair) at Ogembo Hospital and has been consistently in full use (about 12 - 15 patients) in the low malaria period. This highlights that Ogembo hospital is too small for the purposes demanded of it as a district centre and that there will be severe capacity constraints for the approaching season. The other donated tent was taken down and stored by the hospital while still wet and has subsequently rotted.

Merlin has other tents available if they are required. Any provision of temporary accommodation for beds will be done in conjunction with MSF-F as they are supporting inpatient management of malaria at both Ogembo and Kisii Hospitals.

Merlin has not employed any staff to assist with case management since December 1999 and has no plans to do so during the malaria season for the reasons previously stated.

- **to provide additional treatment capacity of 35 beds at Nyamache Health Centre, Gucha District**

Following discussions with the Gucha DHMT it was decided that it was more appropriate to donate 15 folding hospital beds and mattresses to Nduru Rural Health Demonstration Centre as this area is more remote than Nyamache.

- **to provide additional treatment capacity to one other strategically placed treatment facility in northern Kisii District**

Merlin seconded two nurses to work at Marani Rural Health Demonstration Centre and provided much needed hospital equipment. Marani was chosen as it was unsupported by any other organisation and serves a greater catchment area than other facilities.

- **to co-ordinate with MSF-France and donor agencies, to ensure that additional temporary treatment capacity is established at Kisii Hospital**

MSF-France, World Vision and CARE provided staff and beds at the height of the malaria crisis. Since the epidemic, Merlin has provided some equipment to Kisii hospital to enable them to respond to future outbreaks. MSF-France has agreed to provide staff if necessary during the 2000 season.

- **to reinforce epidemiological and entomological information systems and monitoring in both districts and facilitate the collection of data from district health facilities**
- **to support the MoH in the analysis of epidemiological information**

Merlin worked closely with the records departments of Kisii and Ogembo Hospital to collect malaria data for 1999 and for previous years where possible. This has required thought, energy and imagination, as MoH records staff needed encouragement to make the best use of their limited resources to collect information. An important problem is the lack of feedback which both the district as a whole and individual rural health facilities experience, even if they submit data. Another problem, particularly in Gucha, is that due to staff shortages, inexperienced staff without training in data collection are posted to remote facilities and no assistance is offered on this vital aspect of their role.

Merlin provided basic stationery and other equipment to rural health facility staff to assist them collect data and assisted with transport where possible. Merlin employs a Data Collection Officer (funded by OFDA from November 1999 to January 2000), who travels to the rural health facilities to collect data and assist staff in record keeping. This is done in collaboration with MoH and MSF-France records staff. In January, Merlin bought a motorcycle for the Data Collection Officer, which together with this staff member are now funded by OFDA's co-funder.

Reporting arrangements are regularly reviewed with the DHMTs and MSF-F to ensure the most appropriate presentation of timely, accurate and relevant data. Some changes have been made since the beginning of this year to weekly and monthly reporting to allow more accurate comparisons with 1999. Following discussions with the central MoH staff, every effort will be made to ensure that records staff are working together and joint monthly reports are produced for submission to the Provincial Medical Office and MoH Nairobi.

Analysis of the relationship of malaria to rainfall is continuing to be developed. Merlin has now access to rainfall measurements for 2000 and this is assisting monitoring of the local situation.

A follow up cross sectional prevalence survey to provide information on background malaria infection rates in the community was not done by Merlin as MSF-F undertook a background prevalence and diagnostic accuracy survey in March. This has been repeated on a further two occasions with a community prevalence rate on each occasion of approximately 13% (suggesting that the sustained preventative campaign by Merlin may have had some effect). Further surveys are planned by MSF throughout the malaria season. As these results will be shared with Merlin it was thought that further prevalence investigations by Merlin were unnecessary. In addition a research project led by a Wellcome Trust /Kenya Medical Research Institute Research Fellow will encompass a community prevalence survey at the height of the season in 2000.

Results of Objective 2: To improve access to malaria treatment for isolated and vulnerable communities

Specific objectives:

- **4 mobile malaria teams to provide health care to vulnerable communities in Kisii and Gucha Districts (2 in each) with limited access to existing MoH facilities**

Two Merlin mobile clinics were established on 28th June 1999 in Kisii and Gucha districts. Each mobile team consisted of two nurses, a community health educator, a vector control officer, and a driver (the nurses and the drivers were Merlin staff). The teams operated seven days a week during the height of the outbreak, providing health education and malaria treatment to remote communities with otherwise poor access to health facilities. A second pair of mobile teams was established in the first week of August.

The mobile clinics were discontinued on 11th September 1999 at the request of the Provincial Medical Office when malaria case reports showed consistent reduction. Eight nurses and two senior project officers were retained by Merlin to

- undertake community based malaria control activities in both districts; health education in schools, at public meetings (barazas) and house to house during an intensive household residual spraying campaign conducted jointly with the MoH
- set up and monitor 32 community based groups conducting community based malaria control activities and selling insecticide treated bed nets.

MSF-F plan to run mobile clinics in selected areas across Kisii and Gucha should the need arise this year.

- **To identify community representatives in key locations, capable of being trained to provide a first-aid level malaria treatment service, and to identify cases requiring referral to treatment centers.**

Thirty-two community self help groups were selected based on criteria jointly agreed with the DHMTs to participate in a cost recovery scheme to sell insecticide treated bed nets at subsidized prices. These groups undertook a three-day training at the end of 1999 to prepare them to participate in this programme. The training included simple malaria treatment. This has subsequently been emphasised in training provided by the DHMTs using Kenya National Guidelines for simple malaria treatment for "community resource persons" i.e. community volunteers. A process is currently in progress to identify a further 20 community groups and these will also be trained in simple malaria treatment as well as basic prevention and control methods in the home and community. If the need arises, Merlin retains a small stock of drugs which can be use by these groups to provide basic treatment to the population in their sub-location and location.

Sulpha-Pyrimethamine (SP) drugs have now been deregulated by the Government of Kenya and are available over the counter so it will be possible for the groups to dispense SP formulations if

required.

- **to ensure referral of severe anaemia cases to hospital from outlying inpatient facilities by public transport**

Whilst maintaining the mobile clinics, Merlin facilitated the transport of 331 severe cases of malaria, most of whom suffered from severe anaemia, to appropriate facilities for further care.

Merlin does not anticipate providing case management support this year. MSF-F is supporting both districts to decentralize blood transfusion facilities so that blood donation, cross matching and transfusion can take place at Ogembo and one other rural health facility. See donations list for supplies and equipment support to laboratories (Appendix #1).

- **to collect epidemiological information including morbidity, mortality, treatment, drug management records and drug orders from all district health facilities**

Please see the summaries of data collected this year and comparisons with 1999 (Appendix #2) for further information on the surveillance support described in Objective #1. Further information will be collected on laboratory diagnosis and inpatient deaths to supplement the case reporting in outpatients.

B. POSITIVE EFFECTS OF THE PROGRAMME ON THE TARGET POPULATION

Morbidity and mortality from malaria and malaria awareness

The most obvious difference between 1999 and 2000 is the feedback from the rural health facilities, the provincial administration and the community as a whole about malaria. In 1999 case reports from health facilities doubled between the end of April and end of May and many more severe cases and deaths were seen (nearly three times the number of deaths in May 1999 compared with May 2000 in Kisii District Hospital). The various branches of the local civil service; health, administration, police, agriculture (etc.) are largely aware of the Merlin programme and appreciate the positive effect it has had on the health experience of local people. Components of the programme which are specifically mentioned as having positive benefits are;

- the intensive residual insecticide household spraying campaign
- the accompanying health education undertaken in public meetings, local schools and house to house on the causes, prevention and treatment of malaria (including the use of SP drugs)
- the support (equipment, training and joint working) to the MoH
- the community insecticide treated net scheme

Whether at official meetings of the MoH (in Nairobi or locally), other local meetings or informally the increased awareness and preparedness of the population is mentioned; many more people understand the cause of malaria, the importance of taking correct and prompt treatment and what may be done to prevent malaria. In addition MoH staff are more up to date and have actively participated in malaria awareness raising activities sponsored by Merlin which has motivated them as they have seen the positive effect of their work.

This informal qualitative and mainly subjective feedback has to be balanced against the more

quantitative evidence available. As described, despite the increased numbers of health facilities now reporting, the number of malaria cases and deaths reported are fewer in May 2000 than the same period in 1999. The cross sectional community prevalence surveys of MSF-F have shown no increase in malaria parasitaemia during March - May. The results of other research will be known later in the year (see next section for details).

Other differences between 1999 and 2000 will have influenced the different picture. In 1999 the rain was heavier, earlier in the year and over a shorter period leading to a very rapid escalation in transmission following rapid increase in the mosquito population. DFID have supported the implementation of the change in treatment by underwriting the provision of adequate supply of SP drugs in highland areas. The continued input of MSF-F has been influential in the improved case management of outpatient and inpatient cases. Perhaps most importantly, the readiness of local MoH staff to work with Merlin despite extremely limited resources has ensured an impact across a large population and geographical area. It is most unlikely that Merlin could have achieved the type of profile and effect it has done if it had been working on its own as an NGO.

Research and development

A particularly positive result of the work in Kisii and Gucha has been the strong research interest stimulated in highland malaria among the wider humanitarian and academic audience. In response to this Merlin are collaborating with Kenya Medical Research Institute and the Wellcome Foundation to assess the relative cost effectiveness of the intensive residual spraying campaign against the ITN programme. This forms part of a wider review of the ITN programme, which includes the bed net retention study outlined in the original proposal. The combined results of this investigation will be available at the end of June and are expected to influence Kenya Government policy in coming years.

Local politics

As mentioned another positive aspect is the interest expressed by the Provincial Administration (the local administrative civil service which has chiefs and assistant chiefs covering geographical "locations" accountable through a Divisional Officer to the District Commissioner), in the malaria control activities of Merlin at community level. After an initially suspicious reception by both local people, chiefs and assistant chiefs about motives, Merlin's activities are now warmly welcomed and there are continued requests for assistance from communities and their administrative officers.

Malaria remains high on the political agenda, with the situation in Kisii reported in the local and national newspapers during the early part of the year. These reports have not always been constructive and local MPs have also been quoted as mentioning aspects of Merlin's work in a way which suggests that either they are not fully aware of the purpose of the programme or perhaps have an interest of their own to pursue. This means that Merlin has had to be particularly aware of the effect of its activities on local and national politics and take care to ensure all potential stakeholders are kept informed of activities.

Relationships with the local Ministry of Health and MSF-France

The DHMTs of Kisii and Gucha were overwhelmed by the crisis in June 1999. There were staff shortages (compounded by staff falling ill with malaria) and lack of technical and management

capacity as well as serious shortages of all other resources. Since June 1999, Merlin has worked closely with both DHMTs to tackle these issues. This has been easier in Gucha where the MoH wished to work with an INGO and has facilitated effective partnership working with Merlin.

Despite all attempts at discussion with the Medical Officer of Health in Kisii, he remained resolutely uncooperative, perhaps because of the insistence by Merlin officers that all assistance to the MoH should be accounted for, discussed openly and agreed with all relevant parties. MoH within the Provincial Medical Office and at national level are aware of these local difficulties and support Merlin's efforts to maintain good working relationships with other MoH staff. However it has meant that there has been no corporate decision making by Kisii DHMT (it has not met since October 1999). This has been unsatisfactory for Merlin as decisions by individuals on the DHMT may not be agreeable to all or a priority for the District as a whole. This MOH has recently been transferred to another district.

Collaboration in data collection between Merlin, the MoH and MSF-France has led to implementation of a system allowing rapid transmission of information to the concerned parties in the region, as well as to National Malaria Control Programme and Division of Communicable and Vector Borne Diseases in Nairobi. Training sessions are now being held for staff responsible for record keeping and reporting in rural health facilities.

Merlin's future role in Kisii and Gucha

Now that the ITN scheme is underway and plan for a further 20 groups to be trained is in place, it is apparent that further work is required to ensure the initiative is sustained over the next 2 years. By this time groups could legitimately expect to have achieved market saturation of ITNs (other studies suggest this is reasonable). It is also apparent that these groups have potential to exert influence at local level on simple malaria control and other public health activities as well as developing their income generating activities (e.g. in small scale agriculture). Improving the socio-economic situation of the population will assist their ability to respond to malaria even at a simple level (e.g. purchasing treatment and a treated mosquito net).

The role of education and local administration in malaria control

The work in schools has revealed the lack of educational resources available to staff and pupils to enable them to provide and receive health education in the classroom. For the future, it will be essential to discuss with both the Ministry of Education and the Provincial Administration as well as the Ministry of Health to try and generate a way forward which integrates the contribution all three sectors can make together to malaria control in the area

Merlin continues to build on the collaboration developed during the last six months to encourage the DHMTs in both districts to prepare for and manage seasonal malaria increases and anticipate in good time when demand may outstrip supply. Merlin is now seeking funding for a two and a half year programme to consolidate this planning and management process.

C. UNFORESEEN CIRCUMSTANCES AND EFFECTS ON OVERALL PERFORMANCE

The most relevant unforeseen circumstance is that of the delay in approval and receipt of funding at the commencement of the programme in 1999. Merlin anticipated OFDA funding would be for the period June – December 1999 which would have covered the height of the malaria crisis and allowed Merlin to run the programme in coordination with ECHO funding. As it was, implementation of the emergency programme was staggered; two mobile teams commenced in June but it was not possible to establish the other two teams until early August. It is not possible to estimate the deaths and other severe consequences that may have been avoided should the emergency response have been more timely but this delay was clearly not an ideal situation.

On a more positive note, November 1999 to March 2000 is low season for malaria in the region (although this still means a background level of approximately 18 000 – 20 000 reported malaria cases a month and 50 deaths from malaria reported from health facilities across the two districts). Merlin therefore concentrated on the training and follow up of 31 of the 32 trained community groups and other malaria control activities funded by OFDA's co-funder. The main component of training of community groups is the promotion of insecticide treated bed nets (ITNs). The groups have been given a set number of nets by Merlin in the first instance to enable them to start a revolving fund from net sales from which further nets will be purchased from a supplier in Kenya. Whilst OFDA has not been directly funding the ITN scheme, neither this nor other activities would have been possible without the logistics support within the OFDA programme.

IV. RESOURCE USE/EXPENDITURE

A. SUMMARIZATION OF RESOURCES COMMITTED

8. MISCELLANEOUS

Merlin did not utilise funds allocated for a final community prevalence survey. Instead this survey was incorporated into a larger Wellcome Trust funded study to comprehensively review the ITN programme and the cost effectiveness of ITN compared to residual spraying.

B. BREAKDOWN OF EXPENDITURE BY OBJECTIVES

Please See Attached Sheets

V. CONCLUSION

A. MAJOR ACHIEVEMENTS

Over the last year Merlin has worked effectively to provide assistance to the local health services to manage a malaria outbreak in Kisii and Gucha Districts and to start a programme of development with the local Mhos and the community to ensure future malaria awareness and preparedness. The following has been achieved;

- Provision of four mobile teams to diagnose and administer first line treatment for malaria, health education in remote areas. 45,909 people were treated by the mobile teams between end-June and mid-September 1999 and 331 assisted to receive intensive inpatient treatment
- Secondment of 15 additional nursing staff to existing MoH static health facilities between the end of August and end of December 1999
- Staff training and provision of information on the Kenya National Malaria Guidelines,
- Logistics assistance to distribute anti malarial drugs
- Refurbishment and equipping of four clinics and provision of medical and other equipment to several other facilities including ten microscopes
- Training of 32 community groups (31 operative) on insecticide treatment and sale of bed nets
- Establishment of data collection and malaria surveillance system which will enable greater future malaria preparedness.

Overall Merlin has achieved a remarkable amount in a short time. The organisation is now recognised and welcomed on the local scene. Health, administration and education are interested in how they can work with Merlin in the future. It will be important to conduct discussions and build relationships on a clear understanding of what Merlin sees its role to be – as a facilitator to assist local partners to build the organisational systems and human resources for the future, rather than as a supplier of goods and services. This is not easy as up to now Merlin has operated largely as other NGOs in emergency situations bringing in a lot of “goods”. Local services are used to using NGOs as ad hoc providers of whatever comes to mind at the time. This is the inevitable result of repeated short-term emergency interventions, which NGOs tend to offer and to which local people and services adapt and thus make opportunistic requests while an NGO is in town. It is also a feature of life in the kind of environment prevailing in Kisii and Gucha. On an individual level most of the population live in continual crisis because of the uncertainties around health, income, food, water and shelter. In certain circumstances such as drought, flood or war, individual crises build up until there is a disaster which comes to international attention. External assistance is provided temporarily which allows people to survive that crisis but nothing is done to set up systems to promote stability and avoid future disasters.

Building for the long term often involves intangibles that are transferred through talking, listening and doing things together. This is more difficult for donors, the NGO and the beneficiaries to monitor and evaluate but is vital if local public services are going to be able to undertake their own strategic and business planning for malaria in the future.

Appendix #1: Summary of Laboratory Equipment Donated

	GUCHA
	Boige D
	Qty
Chairs office	6
Tables office	1

	GUCHA
	Gesabakwa D
	Qty
Absorbent Gauze 500 Gm	20
Ambu bag - adult	1
Ambu bag - paediatric	1
Basins - metal	2
Benches	3
Chairs office	8
Cord clamps	2
Cotton wool 500Gm	20
Cupboard with lock	1
Fetoscope	1
Flash light (3 battery style)	1
Forceps artery mosquito	4
Forceps dissecting - Non-toothed	4
Forceps dissecting - Toothed	4
Forceps dressing	4
Forceps sponge holding	1
Forceps sterilized utility	1
Forceps uterine vuseliem	1
Gallipot	3
Haemoglobinometer set	1
Haemometer Sahli	1
Kidney dishes - large	2
Kidney dishes - medium	2
Kidney dishes - small	3
Lamp pressure - Petrol	1
Measuring tape	1
Needle Holder	1
Pad Barker Handles	2
Pail with cover for waste	1
Pipette for Haemoglobinometer	1
Scissors surgical curved	2
Scissors surgical straight	2
Scissors, episiotomy	1
Scissors, gauze	1
Speculum - adult	1
Speculum - medium	1
Speculum - paediatric	1
Stethoscope	1
Stools	4
Suction pump (foot operated)	1
Syphomanometer (mercury)	1
Tables office	4
Tongue depressor - metallic	1
Urinometer squibb	1
Weighing pants	1
Weighing scale - Adult	1
Weighing scale - Salter Hanging scale	1
Wick stoves	1

	GUCHA
	Etage HC
	Qty
Bottle - Glass	5
Bottles - Wash - Plastic	8
Brush - Bottle - Small	1
Buffer tablets (50 pcs)	5
Field stain A (25g)	5
Field stain B (25g)	5
Funnel - Plastic	1
Giemsa powder	5
Immersion oil (100 ml)	5
Lancet (200 pcs)	3
Mattress part - Mackintosh	5
Measuring cylinder - 100 ml - Glass	3
Measuring cylinder - 50 ml - Glass	1
Measuring cylinder - 500 ml - Plastic	2
Measuring cylinder Beaker - 100 ml - Glass	2
Methanol (2.5 L)	5
Microscope Olympus	1
Rack - Drying Slides	1
Suction pump (foot operated)	1
Weighing scale - Chemical	1
Xylene (2 L)	1

	KISII
	Ibacha D
	Qty
Aprons - Maternity	4
Forceps artery mosquito	1
Forceps dressing	1
Lamp pressure - Paraffin	1
Lancet (200 pcs)	1
Needle Holder	4
Objective - X100	1
Scalpel holder	1
Scissors surgical straight	1
Slides (72 pcs)	1

	KISII
	Ibeno HC
	Qty
Autoclave (electric)	1
Forceps artery mosquito	1
Forceps dressing	1
Mattress - Neonatal	4
Mattress part - Mackintosh	1
Microscope Olympus	1
Needle Holder	1
Scalpel holder	1
Scissors surgical straight	1
Suction pump (electric)	1
Weighing scale - Adult	1
Weighing scale - Neonatal	1

Appendix #1: Summary of Laboratory Equipment Donated

	KISII
	Iranda D
	Qty
Forceps artery mosquito	1
Forceps dressing	1
Needle Holder	1
Scalpel holder	1
Scissors surgical straight	1

	KISII
	Isecha D
	Qty
Bed - Metal frame - Foldable	3
Mattress - Adult	3

	GUCHA
	Kenyerere HC
	Qty
Ambu bag - adult	1
Ambu bag - paediatric	1
Bed - Metal frame - Foldable	3
Buffer tablets (50 pcs)	5
Cord clamps	4
Field stain A (25g)	5
Field stain B (25g)	5
Forceps artery mosquito	1
Forceps dressing	1
Giemsa powder	5
Immersion oil (100 ml)	5
Mattress - Adult	3
Methanol (2.5 L)	5
Needle Holder	1
Scalpel holder	1
Scissors surgical straight	1
Speculum - medium	2
Steriliser - Prestige	1
Stethoscope	2
Suction pump (foot operated)	1
Syphmomanometer (mercury)	1
Weighing scale - Neonatal	1
Xylene (2 L)	1

	GUCHA
	Kenyerere D
	Qty
Gallipot	3
Pail with cover for waste	1

	KISII
	Kenumbu HC
	Qty
Objective - X100	1
Scissors surgical straight	1
Suction pump (electric)	1

	GUCHA
	Kionjo D
	Qty
Forceps artery mosquito	1
Forceps dressing	1
Needle Holder	1
Scalpel holder	1
Scissors surgical straight	1
Tray - Metal - Large	1

	KISII
	Kiamokama D
	Qty
Bed - Metal frame - Foldable	3
Forceps artery mosquito	1
Forceps dressing	1
Mattress - Adult	3
Needle Holder	1
Scalpel holder	1
Scissors surgical straight	1
Syphmomanometer (mercury)	1

	KISII
	Kisii Hosp
	Qty
Pail with cover for waste	3

	KISII
	Masimba HC
	Qty
Ambu bag - adult	4
Ambu bag - paediatric	1
Buffer tablets (50 pcs)	5
Cord clamps	4
Field stain A (25g)	5
Field stain B (25g)	5
Giemsa powder	5
Immersion oil (100 ml)	5
Methanol (2.5 L)	5
Microscope Olympus	1
Speculum - medium	2
Suction pump (foot operated)	1
Xylene (2 L)	1

Appendix #1: Summary of Laboratory Equipment Donated

		KISII	
		Masongo D	
		Qty	
Pail with cover for waste	1		

		KISII	
		Matongo D	
		Qty	
Steriliser part - Sterile dressing drum	1		

		GUCHA	
		Nyacheki D	
		Qty	
Bed - Metal frame - Foldable	5		
Bottle - Glass	5		
Bottles - Wash - Plastic	8		
Brush - Bottle - Small	1		
Buffer tablets (50 pcs)	5		
Chairs office	2		
Field stain A (25g)	5		
Field stain B (25g)	5		
Funnel - Plastic	1		
Giemsa powder	5		
Immersion oil (100 ml)	5		
Lancet (200 pcs)	3		
Mattress - Adult	5		
Measuring cylinder - 100 ml - Glass	3		
Measuring cylinder - 50 ml - Glass	1		
Measuring cylinder - 500 ml - Plastic	2		
Measuring cylinder Beaker - 100 ml - Glass	2		
Methanol (2.5 L)	5		
Microscope Olympus	1		
Rack - Drying Slides	1		
Suction pump (foot operated)	1		
Tables office	1		
Trolley - Dressing	1		
Weighing scale - Chemical	5		
Weighing scale - Neonatal	1		
Xylene (2 L)	1		

		GUCHA	
		Marani RDHC	
		Qty	
Absorbent Gauze 500 Gm	4		
Ambu bag - adult	1		
Ambu bag - paediatric	1		
Autoclave (electric)	1		
Buffer tablets (50 pcs)	5		
Cotton wool 500Gm	2		
Fetoscope	1		
Field stain A (25g)	5		
Field stain B (25g)	5		
Giemsa powder	5		
Immersion oil (100 ml)	5		
Lamp pressure - Paraffin	1		
Lancet (200 pcs)	1		
Measuring cylinder - 100 ml - Glass	2		
Measuring cylinder - 1000 ml - Plastic	2		
Measuring cylinder - 50 ml - Glass	2		
Measuring cylinder - 500 ml - Plastic	2		
Methanol (2.5 L)	1		
Methylated spirit (5 L)	5		
Microscope Olympus	1		
Oxygen set	1		
Pail with cover for waste	2		
Slides (72 pcs)	6		
Stethoscope	1		
Suction pump (electric)	1		
Syphomanometer (mercury)	1		
Weighing scale - Chemical	1		
Xylene (2 L)	5		

		GUCHA	
		Nyansiakia D	
		Qty	
Bed - Metal frame - Foldable	3		
Mattress - Adult	3		

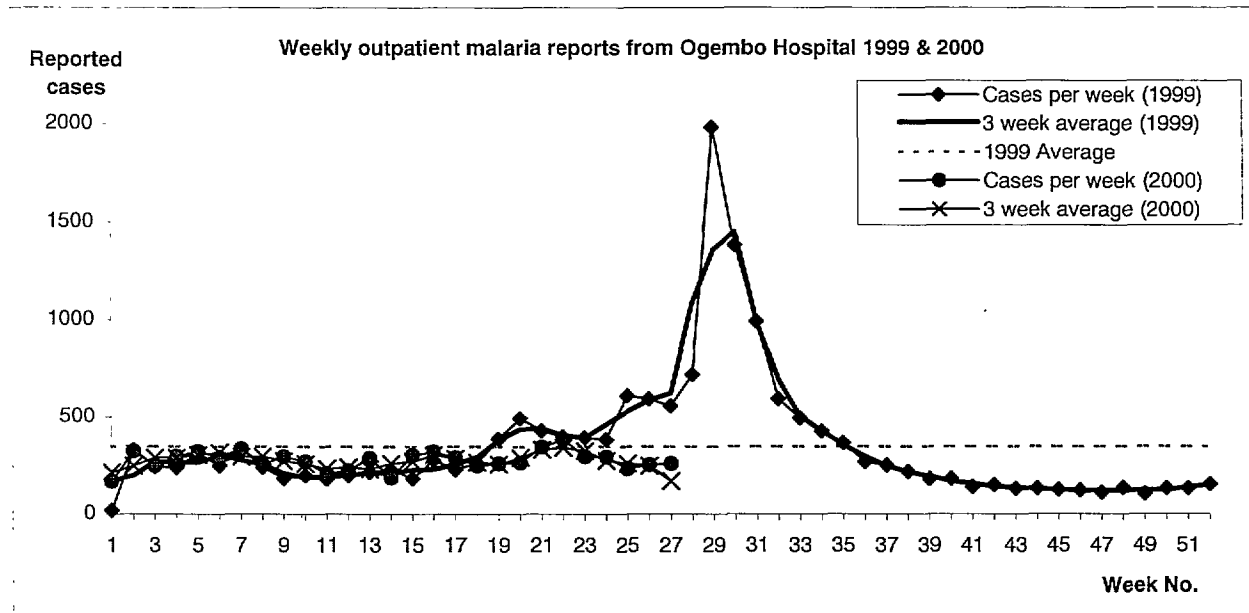
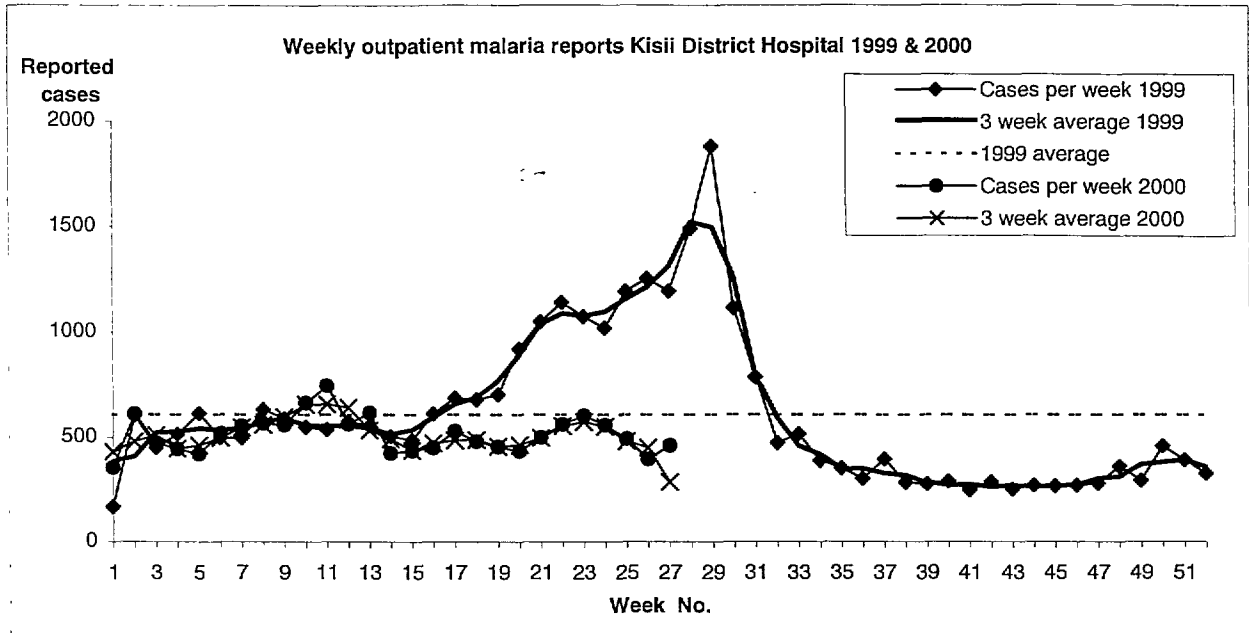
		GUCHA	
		Nyatike D	
		Qty	
Bed - Metal frame - Foldable	1		
Mattress - Adult	1		

		GUCHA	
		Ogembo Hosp	
		Qty	
Pail with cover for waste	3		
Weighing scale - Adult	1		
Weighing scale - Neonatal	1		

Appendix #1: Summary of Laboratory Equipment Donated

	KISII	
	Rionanchi HC	
	Qty	
Blanket	10	
Bottle - Glass	5	
Bottles - Wash - Plastic	8	
Brush - Bottle - Small	1	
Buffer tablets (50 pcs)	5	
Chairs office	8	
Examination couch	3	
Field stain A (25g)	5	
Field stain B (25g)	5	
Forceps artery mosquito	1	
Forceps dressing	1	
Funnel - Plastic	1	
Giemsa powder	5	
Immersion oil (100 ml)	5	
Lancet (200 pcs)	3	
Mattress - Adult	5	
Measuring cylinder - 100 ml - Glass	3	
Measuring cylinder - 50 ml - Glass	1	
Measuring cylinder - 500 ml - Plastic	2	
Measuring cylinder Beaker - 100 ml - Glass	2	
Methanol (2.5 L)	5	
Microscope Olympus	1	
Needle Holder	1	
Rack - Drying Slides	1	
Scalpel holder	1	
Scissors surgical straight	1	
Tables office	4	
Weighing scale - Chemical	1	
Xylene (2 L)	1	

	KISII	
	Riana HC	
	Qty	
Autoclave (electric)	1	
Bed - Metal frame - Foldable	5	
Blanket	10	
Buffer tablets (50 pcs)	5	
Field stain A (25g)	5	
Field stain B (25g)	5	
Giemsa powder	5	
Immersion oil (100 ml)	5	
Mattress - Adult	5	
Methanol (2.5 L)	5	
Microscope Olympus	1	
Xylene (2 L)	1	



1. These graphs show the outpatient cases of malaria reported in 1999 and 2000 from the two district hospitals ie., the main referral centres in each District (Kisii and Gucha). Kisii District Hospital is much larger. It also receives patients from other districts and is itself a referral centre for Ogembo as it has blood transfusion and other facilities.
 2. Graphs represent clinically diagnosed malaria cases