



Community-Directed Treatment of Lymphatic filariasis in Africa

UNDP/World Bank/WHO Special Programme for Research & Training in Tropical Disease (TDR)



Community-Directed Treatment of Lymphatic Filariasis in Africa

REPORT
of a multi-centre study
in Ghana and Kenya



UNDP/World Bank/WHO
Special Programme for Research and Training in Tropical Diseases
(TDR)

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EXECUTIVE SUMMARY

Lymphatic filariasis is an important public health and socio-economic problem affecting over 120 million people worldwide. The recent introduction of new drugs and annual, single-dose treatment regimens has been a major breakthrough in the fight against the disease and, in 1997, the World Health Assembly passed a resolution calling for ‘.....the elimination of lymphatic filariasis as a public health problem...’.

The principal challenge for filariasis elimination is to ensure high and sustained treatment coverage of the populations of affected communities. However, in most endemic countries in Africa, sustained drug delivery to all affected communities is difficult to achieve by the health services alone. TDR has therefore developed the concept of Community-Directed Treatment (ComDT), in which the community itself has the responsibility for the organisation and execution of the treatment of its members. ComDT was effectively tested for onchocerciasis and it is now the principal drug delivery strategy of the onchocerciasis control programmes in Africa.

Because of important differences between onchocerciasis and lymphatic filariasis control, further operational research was required to determine the feasibility, effectiveness and potential sustainability of ComDT for lymphatic filariasis. A study was therefore undertaken in Ghana and Kenya to compare two delivery strategies:

- a delivery strategy of mass treatment by the regular health care system (**HST**)
- a strategy of Community-Directed Treatment of filariasis, which incorporates the health services at the level of implementation (**ComDT/HS**).

The study comprised two phases:

- Phase I consisted of a situation analysis during which basic information was collected.
- Phase II was the intervention phase, during which both HST and ComDT/HS were executed.

One round of treatment was undertaken, and the results evaluated and compared. The study was conducted between July 1997 and October 1999.

In each country, four study units (full health districts in Ghana and half health districts in Kenya) were selected. Two were randomly allocated to HST and two to ComDT/HS. Within each district, 10 communities were selected for the study, giving a total of 80 study communities for the two countries together. The evaluation consisted of a process evaluation and a final treatment coverage survey.

The results indicate that ComDT/HS achieved high levels of treatment coverage - between 75-88% of the population above 5 years of age - that appear adequate for filariasis elimination.

The study has shown that ComDT can be effectively implemented through the regular public health services. Communities and health staff appreciated the ComDT approach and are willing to take part in the future.

High treatment coverage is the main challenge for elimination of Lymphatic Filariasis

Two drug delivery systems studied in Ghana and Kenya

Treatment coverage by health systems was poor

ComDT achieved high coverage needed for elimination

**ComDT
effectively
implemented
by health
services**

The treatment coverage achieved with HST was poor, at around 45%, and insufficient for filariasis elimination. Distance from health centres was also a significant factor. HST coverage was particularly poor in villages located at more than 5km from a health facility, but distance did not affect treatment coverage in the ComDT/HS arm.

As a result of findings from this study, Community-Directed Treatment, implemented through the Health Services, is therefore recommended for drug delivery for filariasis elimination in Africa.

**ComDT/HS
recommended
for the elimi-
nation of
lymphatic
filariasis in
Africa**

INTRODUCTION

Lymphatic filariasis is an important public health and socio-economic problem affecting over 120 million people worldwide. Although there have been some significant successes in the control of the disease, in most endemic countries the burden of lymphatic filariasis remains unaffected, or is even on the increase. However, the introduction in recent years of new drugs and single-dose treatment regimens with diethylcarbamazine (DEC) and/or ivermectin has been an important breakthrough for filariasis control. In 1997 the World Health Assembly passed a resolution calling for ‘...the elimination of lymphatic filariasis as a public health problem...’. The global control strategy for lymphatic filariasis has been redefined, and the principal strategy is now based on annual, single-dose treatment of all eligible members of endemic communities.

The principal challenge for filariasis elimination is to deliver treatment to the populations of endemic communities, and to sustain annual delivery and a high treatment coverage for a sufficiently long period to bring about the elimination of the disease. In most endemic countries in Africa, sustained drug delivery to all affected communities is difficult to achieve by the health services alone, either because they are overburdened with other responsibilities and short of resources, or because of lack of active participation of the population with the official treatment programme. Recent research on drug delivery for another disease, onchocerciasis, indicates that greater involvement of the endemic communities in the delivery process may be a solution.

TDR has developed the concept of community-directed treatment, in which the community itself has the responsibility for the organisation and execution of the treatment of its members. A large, multi-country study has shown that community-directed treatment is feasible and effective in onchocerciasis control, and it is now the basis for the control strategy of the African Programme for Onchocerciasis Control and the Onchocerciasis Control Programme in West Africa.

A meeting held at the World Health Organization in Geneva concluded that Community-Directed Treatment also appears to be a promising strategy for the delivery of single-dose treatment in the control of lymphatic filariasis. However, the meeting noted several important differences between onchocerciasis and lymphatic filariasis control that require further operational research on drug delivery in lymphatic filariasis. Community-Directed Treatment methods should also be compared with health service based delivery, especially in countries with a highly developed health care system, and hybrids combining the two approaches should be developed and tested.

The TDR Task Force on Community-Directed Treatment of lymphatic filariasis and onchocerciasis selected several multi-disciplinary teams to participate in a multi-country study. The aim was to develop effective and sustainable large-scale treatment methods for lymphatic filariasis that are directed by the endemic communities themselves, and initiated and supported by the health services or other partners. The countries involved were Ghana, India, Kenya, Myanmar and Vietnam. This report presents the results for the two African sites.

STUDY DESIGN AND METHODOLOGY

Purpose of the study

To develop effective and practical methods for sustainable annual mass treatment of lymphatic filariasis which will facilitate the global elimination of lymphatic filariasis as a public health problem.

Objectives

- To assess the process and effectiveness of a delivery strategy of mass-treatment by the regular health care system and to identify possible improvements.
- To develop, implement and assess the process and effectiveness of a system of Community-Directed Treatment of filariasis, which incorporates the health services at the level of implementation.
- To compare the feasibility, effectiveness and potential sustainability of the two approaches.

Overall study design

The study compared two different methods of mass treatment of lymphatic filariasis with a single dose of ivermectin:

HST (Health System Treatment)

With this approach, the Public Health System was asked to treat the endemic communities with ivermectin in the way they would normally carry out a mass-treatment programme.

ComDT/HS (Community Directed Treatment through the Health System)

The term Community-Directed Treatment (ComDT) was taken from the onchocerciasis control programmes, where the community itself designs and implements a method for drug delivery that is most suitable to its needs. There is limited involvement of the Health System in this approach. In the present study, the ComDT approach was different in that it was introduced to the community by the Public Health System.

The study comprised two phases:

- **Phase I**, during which basic data was collected about the socio-economic situation in the study area, the presence and performance of health services, and other information required for the design of the ComDT/HS intervention in the second phase.
- **Phase II** was the intervention phase during which both HST and ComDT/HS were executed, one round of treatment was undertaken, and the results evaluated and compared. The results of Phase II are presented in this report.

The study was conducted between July 1997 and October 1999.

Study Units and Sampling

The study unit is determined by the implementation level of the health services which, in both countries, is the health district. In each country, four study units were selected to be included in the study. Two were randomly allocated to the HS delivery arm and the other to the ComDT/HS arm. Within each study unit, at least two clusters of communities, each served by a health centre/sub-district, were selected for the study. A total of 10 communities were selected per study unit, giving a total of 40 study communities per country, or 80 communities for Ghana and Kenya together.

In Ghana, the four study units were health districts. The two northern sector districts (KND and BUL) were paired with the two southern sector districts (AHA and WIN) and randomly allocated to the HST and ComDT/HS arms.

In Kenya, the study units are half districts, thus giving a total of four units for both districts. River Sabaki which cuts across Malindi district is the landmark for division of Malindi into north and south. Kilifi district has no suitable land/geographical feature for dividing it into relatively two equal halves. The division of this district into two halves, therefore, is arbitrarily, on a north/south basis using administrative boundaries. The southern part of each district was allocated to the HST arm while the northern was assigned to the ComDT/HS arm.

In both sites:

- The ComDT concept was introduced by the regular health service (HS) after they have been sensitised by the Research Team. In each of the four study units, at least two clusters of five communities, each served by a health centre/dispensary¹ was selected for the intervention. Thus 40 communities were covered per site.
- In addition, within one study unit in the ComDT/HS arm in each study site, 4 more communities served by a health centre/dispensary were selected where both the HS and the Research Team introduced the ComDT concept. These four communities served as a “reference standard” during the evaluation period since there was the likelihood that the HS may not have properly introduced the ComDT concept to the community.

Evaluation

The evaluation consisted of a process evaluation and a final treatment coverage survey.

The methodology for the process evaluation was mainly qualitative and consisted of in-depth interviews with community leaders, distributors and health workers, and a few focus group discussions (FGDs) with community members. The qualitative evaluation was done in 12 randomly selected villages per study site (3 per study unit). The evaluation addressed in particular (i) training of health workers (content and method of training), (ii) sensitization of the community (approaches and forum), (iii) selection of the distributors in the ComDT arm (how people were informed, inclusion of subgroups in decision making, criteria for selecting the distributors), (iv) operationalization of treatment (how and where drug was delivered, availability, storage and delays, distribution, rationale for the mode of distribution, compliance, constraints, any payment made), and (v) awareness & experience of the community with the other community-based programmes. The evaluation was done 2-3 months after the start of drug distribution and was conducted by the research team.

¹ In Ghana, the lowest level at which this study was implemented was the health centre level. In Kenya, it was the dispensary.

The evaluation of the effectiveness of the different approaches was done through a survey of treatment coverage in all study communities. As in the qualitative evaluation, the survey was carried out by the research team some 2-3 months after distribution started. In each village 20 households were randomly selected. The sampling procedure involved 4 random starts with 5 households visited at intervals of 5 households each in random directions. All members of the sampled households were interviewed to determine whether they received and swallowed the drugs. Adults above the age 15 years answered for themselves; mothers or other caretakers answered for younger children and for anyone who was not present at the time of the survey. The head of the household (or an adult member who represented him/her) was, furthermore, interviewed with respect to awareness of the drug delivery programme and its purpose. The survey was conducted by the research team.

STUDY AREAS AND HEALTH SYSTEMS

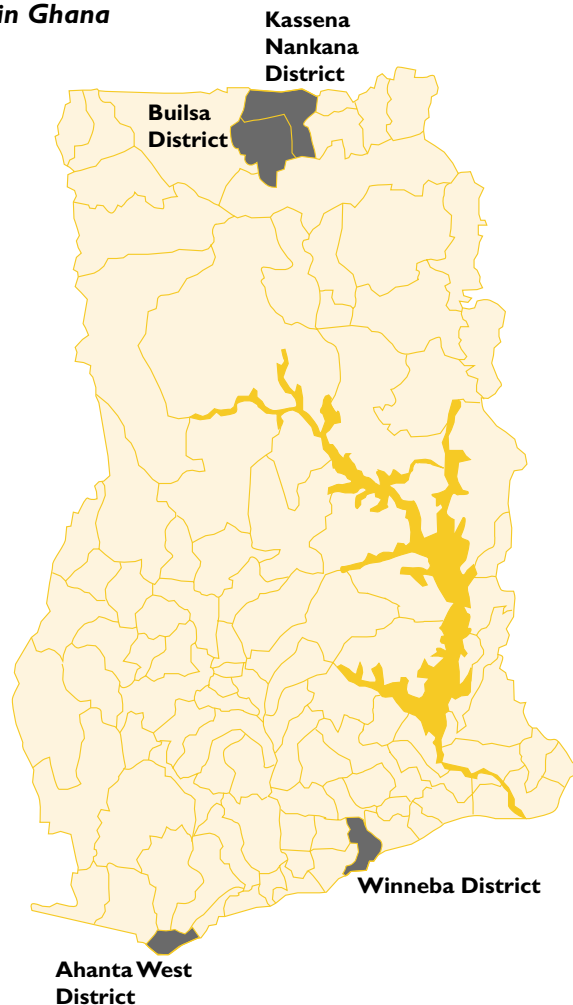
Study areas

Ghana

Ghana is a tropical country on the West Coast of Africa, bordered on the west by Cote d'Ivoire, on the north by Burkina Faso and on the east by Togo. The national capital, Accra, is located on the eastern coast. The total land area is about 238,537 sq. km. The country's agro-ecological zones include the drier tropical savannah in the northern half of the country, the forest belt and the coastal Savannah in the country's southern half. Daily temperature ranges from 21°C and 33°C. The country is divided into 110 districts.

The study was conducted in four districts that were found to be prevalent for filariasis after a national filariasis survey was conducted in the country in 1994. The same four districts were used for both phases of the study. These were Ahanta West (AHA), Winneba (WIN), Kassena Nankana (KND) and Builsa (BUL, see map below).

Location of study districts in Ghana



Study population:

District	Arm	Population	area
Kassena Nankana	ComDT/HS	140,000	North
Builsa	HST	90,000	North
Ahanta West	ComDT/HS	125,000	South
Winneba	HST	110,000	South

The two districts in the northern sector are characterized by Guinea Savanna type of vegetation. The people are mainly farmers who grow crops like millet, guinea corn, groundnuts and beans. There is a large dam with canals for irrigation during the dry season and several small dams which the inhabitants use to water their animals. The people in this sector of the country practice mainly ancestral worship. In the northern sector, the prevalence of filariasis ranges between 20-40%. For elephantiasis it is 3% and hydrocele 20%.

In the southern sector, the vegetation is the coastal savannah type with stretches of mangrove swamps. The inhabitants are mainly fishermen and farmers and grow crops like cassava, plantain and other vegetables. The majority of them are Christians. In the south, the overall prevalence of filariasis is 10-20% while elephantiasis is 2% and hydrocele 10-15%.

Each of the District Health Management Teams (DHMT) that the research team worked with have had some experience in disease control. In the northern sector, there were two large-scale controlled trials on vitamin A and malaria. In addition, attempts have been made to control onchocerciasis through aerial spraying and at controlling filariasis through research projects. The picture in the south is not very different. Disease control activities that have gone on include those for onchocerciasis and filariasis using ivermectin and for yaws using penicillin.

Kenya

The study area covers both Kilifi and Malindi districts which are two of the seven districts in Coast province. Kilifi district is in the southern part of the study site. It is bordered by the Indian Ocean to the east, Mombasa and Kwale districts to the south, Tana River district to the west and Malindi district to the north. Malindi district is bordered by the Indian ocean to the east, Kilifi district to the south and Tana River district to the west and Lamu district to the north (see map). Population size for both districts is 900,000 (2000 projections).

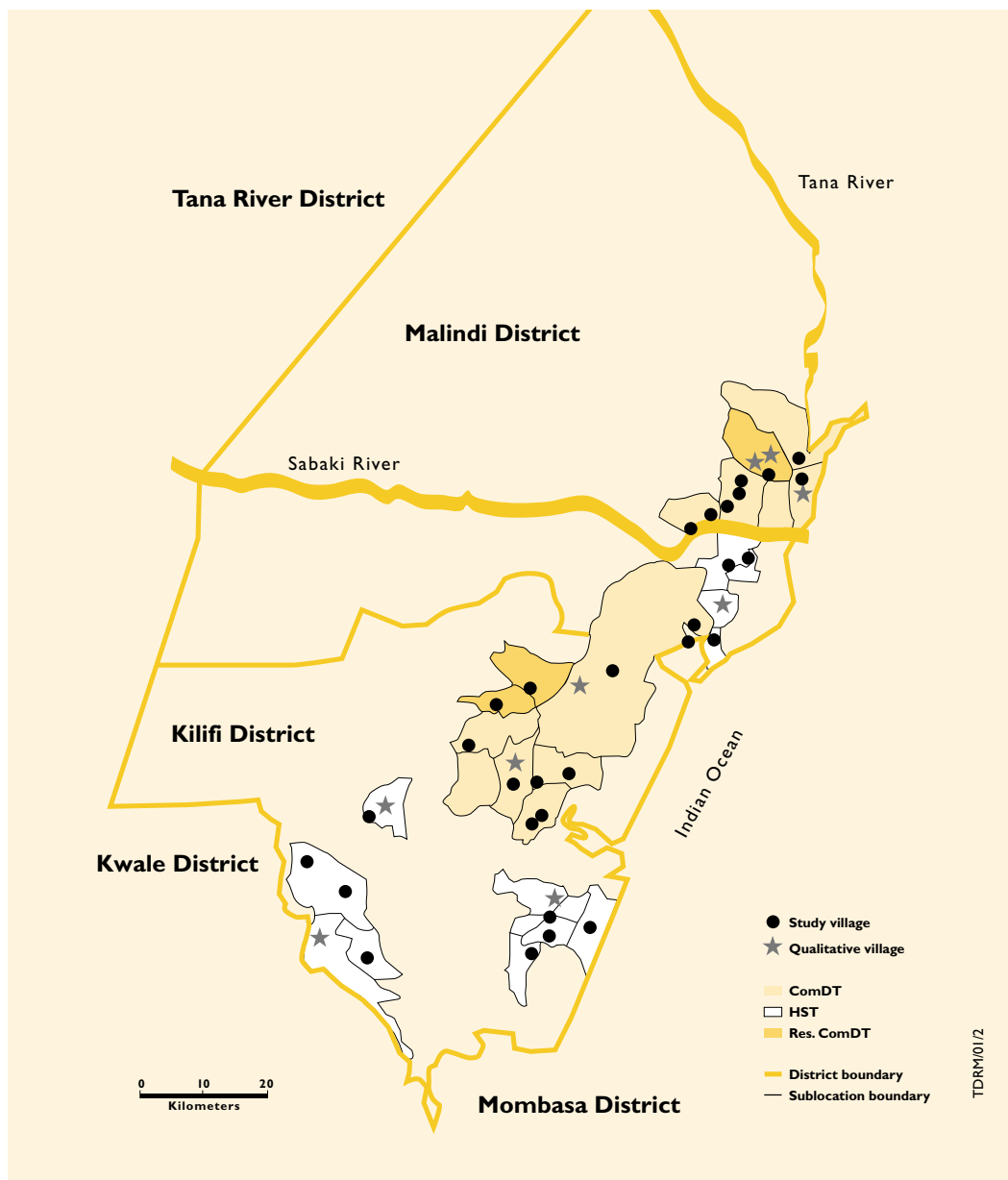
Study population:

District	Study Arm	Population	Locations
Kilifi	ComDT/HS	46,423	Sokoke, Vitengeni, Ganze
	HST	57,480	Mariakani, Chonyi, Mwarakaya
Malindi	ComDT/HS	54,139	Magarini, Garashi, (Sabaki sub-location)
	HST	56,582	Gede, Ganda
Total		214,624	

The selection of these two districts was based on their known endemicity of filariasis as revealed by historical data, and recent research findings, including those of Phase I of the current study. Based on parasitological investigations, prevalence of lymphatic filariasis in this area is 15-25% but much higher (40% and above) by circulating filarial antigens.

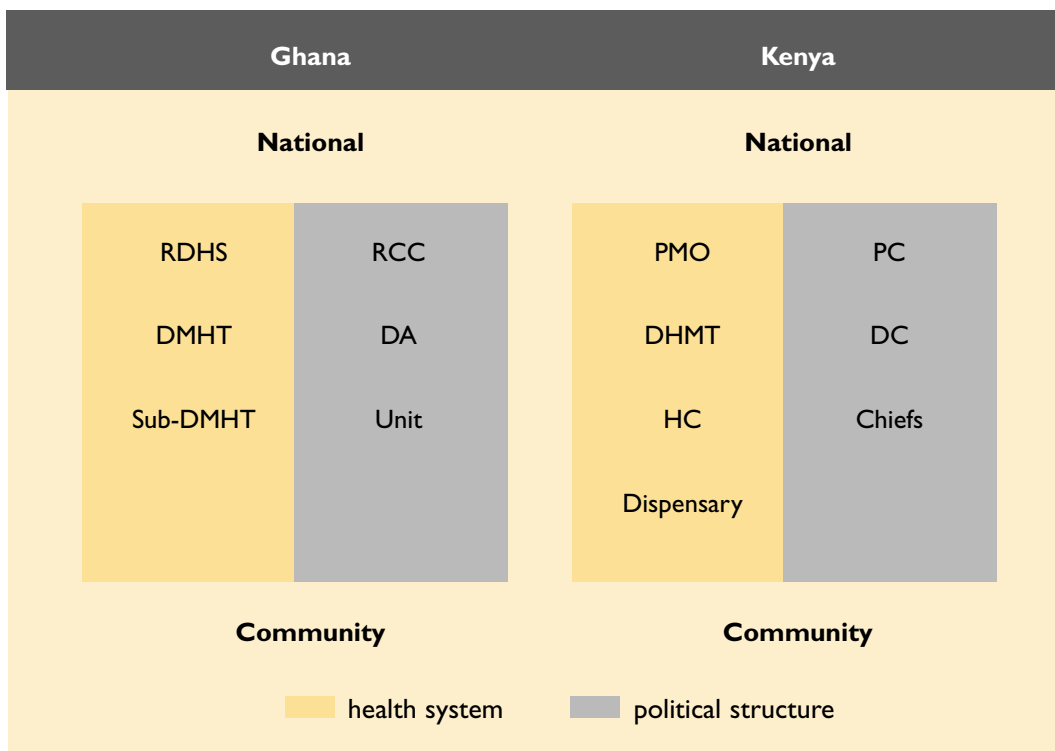
While the River Sabaki which runs from west to east was used to divide Malindi district into two study units, the division of Kilifi district into two units was done arbitrarily, on a north/south basis using administrative boundaries. The southern unit of each district was allocated to the HST arm while the northern was assigned to the ComDT/HS arm (see map below).

Location of study districts and villages in Kenya



The majority of the people are Christians (65%), 5% are Muslims and the remaining 30% practice traditional religions. This area is mostly inhabited by one major ethnic group, the Mijikenda, and 46% of the people have no formal education.

Health and political structure



The diagram below shows the structure of the health system in the two countries.

Ghana

Health services in Ghana are organized at five main levels; the community, the sub-district, the district, the regional and national levels. Services to many communities are delivered through outreach programmes and community based services are few. However, services of resident or itinerant herbalists, Traditional Birth Attendants (TBAs) and or chemical sellers are usually available to community members.

The sub-district is a geographical area with a population between 15,000-30,000, usually served by at least one health centre. A health centre serves as a base from which services to the communities in its catchment area are organised. The health centre has a team of health workers comprising a medical assistant, clinical nurses, public health nurses, community health nurses, disease control and nutrition staff. These make up the Sub-District Health Management Team (Sub-DHMT). There are also midwives who provide maternity services.

The district is the referral level for all types of services from the sub-district catchment populations. Each district is supposed to have a hospital but that is not always the case. Patients using the health centre who need to be referred are sent to the nearest hospital. It is headed by a District Director of Health Services (DDHS) who works with a team known as the District Health Management Team (DHMT). Public health services at this level focus on providing support to sub districts in disease prevention and control, health promotion and general education of the public on health.

At the regional level, specialized care in broad areas of medicine and surgery is provided. Public health services at this level focus on providing technical and logistic backup for epidemiological surveillance and in-service training for public health workers. Every region has a

hospital, which provides specialized clinical and diagnostic care in all areas of medicine, general surgery paediatrics, obstetrics and gynaecology and so on. The team at this level is the Regional Health Management Team headed by a Regional Director of Health Services (RDHS).

The national level constitutes the apex of specialized and more sophisticated services. Public health services at this level focus on providing laboratory support for public health surveillance, providing guidelines and protocols for monitoring disease trends, nutritional surveillance and advocacy for government policies to improve on the health of Ghanaians. Teaching hospitals are available at this level to provide the most specialized clinical and maternity care. They play a key role in providing the highest level of training and research in the country and offer under-graduate and post-graduate training for doctors and other health professionals.

The administrative system runs along similar lines. At the community level, the unit committee, which is a team of people elected by the community, is the lowest level of political administration of the country. It is the focal point for all sectoral activities. Sub-district health teams relate directly with these committees for integrated development at the community level. A chairman, who reports to the assemblyman at the district level, heads the team. The assemblyman reports to the district assembly, headed by a chief executive (a government appointee) on all matters arising from unit committee meetings. Heads of all sectors, e.g. health agriculture and education, attend assembly meetings and give their input. At the national level, the Minister of Health and his deputies, who among other things, aim to achieve inter-sectoral collaboration, are concerned with policy formulation and resource mobilization. The minister reports directly to the president.

Kenya

The structure of the district health system in Kenya has three broad levels viz ; the district hospital, the health centres and the dispensaries. The management of the district health service is done by the District Health Management Team (DHMT). The DHMT is composed of various heads of department who are answerable to the District Medical Officer (DMO) the overall head of the District health system. Besides the DHMT, there is District Health Management Board (DHMB). The DHMB is the secretariat which oversees the general maintenance of the district hospital facilities and administration. Beyond this, at the village level, village health committees comprising of selected community representatives, local administrator (chief and/or assistant chief) and a health officer in charge of the health centre or dispensary have been formed to oversee the interests of the community in the local health facility. These committees' responsibilities include general maintenance of the health facility, fund raising and administration of the cost sharing scheme and drug collection from the district level. The chairman of the village health committee is the area chief or assistant chef while the health officer serves as the secretary.

Health facilities in both the study districts are few relative to the population they are expected to serve. There is a total of 2 district hospitals, 6 health centres and 34 dispensaries. These facilities are supposed to serve a combined population of 749,555. There are wide variations in the distribution of the health facilities between the two study districts. Malindi has only 1 health centre while Kilifi has 5 health centres. This disparity has had implications for the implementation level of the ComDT/HS arm for phase II of the study. While in Ghana ComDT/HS was implemented through the health centre level, the Kenya site used dispensaries as the level of implementation.

Situation analysis of the health system, the communities and their interaction

Basic data about the socio-economic situation in the study area and the presence and performance of health services was collected during Phase I. Furthermore, during this phase, data required for the design of the ComDT/HS intervention in the second phase was collected. The data collected was both qualitative and quantitative.

At the health system level, a review of records of census data was done to estimate the population and describe the actual functioning of the government health delivery system in the country. This method also helped to identify basic functionaries, positions filled/vacancies, activities of health service personnel, and reporting and monitoring of information. A visit was also made to the district headquarters to inquire about the structure, activities and functioning of the health system.

Four DMOs, one from each of the study districts, were interviewed using a semi-structured interview guide to identify training facilities and programmes provided by government and non-governmental organizations (NGOs). They also provided information on local points of drug supply and the channels of drug distribution from the higher levels, and characterised the drug delivery system with respect to procurement and transfer from central source of supply through different levels to the communities.

Eight group discussions, two per district, were held with health personnel to determine the availability of health service personnel to work with ComDT/HS for lymphatic filariasis, and to assess their knowledge of lymphatic filariasis and attitudes towards the community.

At the community level, 24 in-depth interviews (two in each village) were held with both male and female key informants to help characterise the social structure and organisation of the community. They were also asked about local terms for filariasis and whether they thought filariasis was a problem in their area.

Eight sub-group interviews (two in each village) were held with various religious, youth and political groups in the communities selected to determine their awareness and understanding of lymphatic filariasis and their experience with treatment for it.

Main findings

Ghana

With respect to interaction of the communities with the health service, 68% of the population reported that several health workers visited the communities and they included the community health nurse, the environmental health officer, the disease control officer and the medical officer. In the communities in the northern sector, some of the nurses stayed in the communities because of an initiative by a Health Research Centre. This centre is carrying out a study on the use of community-based nurses for providing family planning services in the community. The other staff go occasionally to the community or when there is a national health campaign. Some 95% of those interviewed mentioned that the services provided in the communities are relevant to their needs and that they were satisfied with the service provided.

Concerning visits by community members to the health facilities, 25% had visited the health facility within the last month of the interview, either for themselves or for a member of their

family. Fifty-two per cent had visited the health facility more than a month previously. Eighty-two per cent found the services relevant to their needs and 81% were satisfied with the service. In their opinion, the staff was most of the time available at the facilities and they had confidence in the services they provided to them. They however had some problems with the health system. It was expensive (51%), too far (42%), waiting time too long (38%), no medicine (33%) and rude staff (16%).

With respect to the understanding of the community about filariasis and their experience with treatment: 94% knew about the disease and 77% think it is a problem mainly because those who have the disease are unable to work. The disease is mainly attributed to heredity (25.5%), evil spirits (21.3%) and mosquitoes (18.4%). Only 39.6% of the population think they or their family members are at risk of the disease and 32.2% think it can be cured. Of those who believe it can be cured, about half think it can be done through modern medicine and the other half through traditional medicine. Only 22 % of the population think the disease can be prevented.

With regards to hydrocele, 94% know about it in the community and 80% think it is a problem. Like elephantiasis, the spread of hydrocele was attributed to heredity, evil spirits and to mosquitoes. Forty-one per cent of the population think they or their family members are at risk of getting the disease and 64% think it can be cured mainly through surgery.

Kenya

A shortage of health workers to man the health facilities was observed at both study districts. The health workers interviewed reported that they were few and had to cope with the large numbers of patients who attended the facilities. In both districts there was a total of 68 nurses (38 for Kilifi and 30 for Malindi) and 4 clinical officers (3 for Kilifi and 1 for Malindi) who are supposed to run the district rural health service which covers an estimated population of 749,555 (515,555 for Kilifi and 234,000 for Malindi).

In both districts, only a few villages have health facilities. In villages without health facilities, people have to walk long distances to the health centres and or dispensaries. The distance varies from 1 km to about 19 km. Transportation is very difficult. In most cases people walk to the hospital while some go by bicycle. In some instances, it was reported that sick people are carried by relatives to the health facilities over long distances due to lack of transport.

Procurement of drugs and dressings is undertaken by the Ministry of Health through the Tenders Board. Within the ministry, there is a drug storage and distribution system with a central warehouse, the Central Medical stores (CMS). There is also a well-developed regional network of depots at the provincial hospitals in the provinces. From the provincial hospital stores, the drugs are delivered to the district stores at the district hospital and subsequently delivered to the health centres and the dispensaries, although drugs and dressings do not always reach their destinations in time due to constraints such as transportation.

The majority (99%) of the community members interviewed reported they had heard about elephantiasis and hydrocele. Defined terminologies for the disease existed, namely “matende” and “mshipa wa kutserera” for elephantiasis and hydrocele, respectively.

On knowledge of the causes of filariasis transmission, only 32% associated it with mosquitoes while the majority (68%) attributed its cause to heredity, fate/destiny, evil spirits, collection of

bad fluid in the body and fever. With regard to the burden of the disease, most people felt that the disease prevented them from doing normal activities. It was also reported that persons with the disease suffered stigma and others suffered marriage problems. Most people with filariasis take the chronic condition as a life-time experience and on initial experience of the disease, some people consult herbalists or soothsayers because of the belief that filariasis has a supernatural cause. However, from the sample surveys, 76% reported that filariasis could be treated or prevented through modern medicine, yet it was also reported from group discussions that those individuals who had filariasis found it difficult to go to the health facilities because of distance, pain, expenses and stigma. In order to relieve them of severe pain, the majority opt for drugs (mainly antibiotics and analgesics) from peddlers and quacks in the villages.

On community interaction with the health service, it was indicated that the majority of the health workers don't visit the villages regularly. They only go to work in the villages whenever there is a campaign such as immunization and or when there is a cholera outbreak. There are however a few health workers who make efforts to visit the villages for outreach services whenever they can. These are mainly nutritionists, the family planning educators and public health technicians.

When asked how often health workers visit the villages, most (49%) respondents in the sample surveys reported that health workers rarely visit; 30% said health workers come once in a while and 19% said they don't know. A few (10%) said the health workers came regularly. This information was corroborated by the in-depth interviews and focus group discussions with the villagers.

In the opinion of the health workers with whom the researchers had group interviews at the health centres and dispensary, drug distribution should not be done by the community people independently. They felt they had to be involved in some way and that there would be problems if drug delivery was left solely to the community distributors. Some of the problems they foresaw with community distributors included lack of adequate knowledge on how to handle drugs, risk of overdosing the minors (children), community members would not take the programme seriously and lack of confidence in non-medical staff by the community.

The health workers said they were willing to support drug delivery through the ComDT/HS especially at the level of training and supervision. Overall, they said ComDT/HS was worth trying because it would help the community where the health service has not been effective due to shortage of personnel and it would also bring both the community and the health service into more partnership for the betterment of the community.

Two sites combined

The key findings from the first phase of the study can be summarized as follows:

1. Communities participated and supported many health programmes but were not given full responsibility for drug distribution on a large scale.
2. Health facilities were available but not always accessible.
3. Community health workers visited the community whether on request or as a routine and performed mainly MCH activities.

4. Communities had local terms for both elephantiasis and hydrocele and were highly aware of conditions that existed in their situation. It was generally perceived that the diseases (hydrocele and elephantiasis) were a problem.
5. Knowledge about cause, transmission and treatment of filariasis was generally low. There was no link between hydrocele and elephantiasis.
6. Despite the fact that health workers thought drug distribution should not be given to community people independently, they felt that it was worthwhile trying out ComDT.
7. Most Medical Officers thought that, with proper planning, the health service can make time to work on ComDT.

DESCRIPTION OF THE TWO DRUG DELIVERY METHODS

The two interventions that were evaluated and compared are:

- (i) **HST:** mass treatment through the regular health system (HS) and
- (ii) **ComDT/HS:** a system of Community-Directed Treatment involving the health system (HS) at the implementation level.

The activities related to the implementation of the two drug delivery methods are summarised in the table below. They fall into five broad categories:

1. Sensitisation of the health service and the community;
2. Development and utilisation of health education messages and IEC materials;
3. Choice of Distributors as well as timing and mode of drug distribution;
4. Training of the various actors at all levels, and
5. Procedures for drug distribution, monitoring and record keeping.

Activities	Activity executed by	
	HST	ComDT/HS
1 Sensitisation and planning for mass drug administration	Senior health officials	Senior health officials
2 Training of key trainers	Senior health officials	Senior health officials
3 Training of implementation staff	Key trainers	Key trainers
4 Development of health education messages and IEC materials	DHMT	DHMT
5 Execute IEC campaign	DHMT / health worker	DHMT/ health worker
6 A. Sensitisation of community on drug delivery B. Sensitisation of community on ComDT	health worker	health worker
7 Selection of Community Distributors		Community
8 Training of Community Distributors		DHMT/ health worker
9 Selection of drug delivery method	DHMT	Community
10 Decision on time table for drug delivery	DHMT	Community
11 Drug procurement	Health worker	Community from agreed place
12 Drug distribution	Health worker (+/- commun. assistant)	Community Distributors
13 Monitoring of drug delivery	Health worker	Community
14 Record keeping	Health worker	Community Distributors

Mass-treatment by the Health Care System (HST)

Under the HST method senior health officials at the state/regional/provincial level are responsible for the planning and execution, through the district health service, of the programme for drug distribution. Sensitisation of the health service and the training of key trainers are undertaken by the senior health officials. The key trainers in their turn identify, within the District Health Management team (DHMT), suitable health workers whom they train for the drug distribution programme. Taking account of local, socio-cultural and linguistic factors, the DHMT develop appropriate health education messages and IEC materials and undertake an IEC campaign to sensitise the target communities for the mass drug distribution programme. The DHMT is also responsible for preparing a timetable for the distribution exercise and the mode of distribution in target communities.

Mobilisation of the community and arrangements for the procurement and distribution of drugs, as well as the monitoring and recording of events related to the distribution, are the responsibility of the designated health worker.

Community-Directed Treatment through the Health Care System (ComDT/HS)

In the method of Community-Directed Treatment through the Health Service (ComDT/HS), the involvement of the senior health officials in the sensitisation of the HS and training of key personnel is similar to that for the HST method. Also, under the ComDT/HS method, the key trainers carry out the same set of activities as for the HST method, and the DHMT take responsibility for the development of IEC materials and conduction of the IEC campaign. A designated health worker is responsible for sensitising the community on ComDT, but unlike in the HST, the community itself is responsible for the selection of the drug distributors (CDDs), and for taking decisions on the time, place and method of drug distribution. In the ComDT/HS method the mobilisation of the community and monitoring and recording of the drug distribution events are undertaken by the community and the CDD respectively.

IMPLEMENTATION OF TWO DRUG DELIVERY METHODS

Mass treatment by the Health Care System (HST)

Sensitisation and planning for mass drug administration

- The Regional Directors/Provincial Medical Officer of the Health Service and their teams were briefed on the findings of Phase I and the plan for Phase II. There was a lot of discussion on the principles and rationale for filariasis control.
- The district level health authorities, together with the political arm in the district, were also contacted and briefed on the concept and objectives of the study as well as the details of the findings of Phase I.
- The concept of annual, single-dose treatment for treating filariasis and other aspects of filariasis control in general, and the possibility of interrupting transmission in a period of 5-7 years if high coverage was achieved was also discussed.
- The Health Service was then requested to distribute the drugs according to specific dosage guidelines (by height). They were to do the distribution, as they would normally do any mass drug distribution for their district.

Appointments had to be booked well in advance. The research team members first of all spoke to all Provincial Health and Administrative heads and briefed them about the planned research project and the role of the Health system. (In addition, in Kenya, the research team introduced the project to the Director of Medical Services (DMS), who is based at the national level before moving to the study sites in the Coast Province.). This was followed by a more detailed briefing of the various district health and political heads about mass chemotherapy and the concept of ComDT as a possible approach. Issues discussed included the fact that annual, single-dose mass chemotherapy was a new approach and it was important and necessary to achieve high coverage in order to bring about transmission interruption and the subsequent disease control. In order for this high coverage to be achieved, it was crucial that every eligible person had to be treated. The alternative approach of ComDT, its concept, how it is operationalised and the experience in the onchocerciasis control programmes were explained. The results of Phase I of the ComDT Project and the methodology for Phase II were presented. The research team then allowed the people present to ask questions and provided clarifications. Both the health and the political arms promised to give their support to the project.

Selection and training of health workers

Ghana

At the sensitization of the DHMTs each district director of health service appointed the District Disease Control Officer to act as a kind of coordinator for the whole drug distribution. The sub-district disease control officer in each sub-district was given the responsibility

of making sure that the drugs were distributed in their area. These sub-district heads also have community health nurses working with them. In WIN, a technical officer in charge of disease control and an assistant technician did the drug distribution and appointed health volunteers who had been trained by a local NGO (Plan International) to assist in the distribution. In some places, a teacher or a TBA was asked to help. More often than not, people who have always helped with health programmes in the district were called to help. In KND, due to a research center situated there, there is a system of community key informants already taking vital information in the communities and carrying out other health programmes. They were asked by the health staff to do the distribution. The health staff just supervised and made sure that all was done well.

All health workers whether in ComDT/HS or HST received a two day training from their District Health Management teams. The aim of the training was to help health workers understand the concept of ComDT and how it is implemented in the community. The training was an interactive process using a wide range of participatory methods that included lectures, plenary discussions and role-plays. Participants also had practice sessions to sharpen their skills in community entry, facilitating small groups, story telling, songs and developing posters and other materials. These sessions were held in the conference room of the DHMT.

Other topics covered during the training included mode of distributing the drugs, the need for updating community registers and preparing them if they were non-existent. Health workers and drug distributors were also trained on keeping of records and the management of side-effects.

Kenya

The first training of the DHMT for both the HST and ComDT/HS arms was given by the research team at each district's headquarters. The contents of the training were: distribution of the disease and how it affects people in Coast province, transmission, life-cycle of the disease, beliefs & taboos, prevention, concept of the programme, drug composition, drug distribution, eligibility, contra-indications, dosage, timing, record keeping, side-effects and management. As in Ghana, the training was an interactive process using a wide range of participatory methods that included lectures, plenary discussions and role-plays. Posters, leaflets, slide projections, transparencies using the overhead projector and hand-outs on filariasis were used. During this training the DHMT selected one of their members who would henceforth act as the District ComDT Co-ordinator (DCC). The second 1-day training was for the peripheral health staff (a Community nurse and a Public Health Technician) at two of the dispensaries serving the ten villages in the HST arm in each district. The training was conducted by selected trained members of the DHMT. The DHMT trained trainers used similar methods, materials and programme as the one used by the research team to train them to train the peripheral health staff.

Development of health education messages, IEC materials and execution of an IEC campaign

Ghana

In Ghana there are no health education or IEC materials on filariasis, or messages on IEC in the study district or in the country as a whole. The research team, as part of some of their research activities two years earlier, had worked with some communities and health staff on

how to develop IEC techniques. These had been videotaped and were borrowed by each of the four districts to be used for this study. They also mentioned that they could organize other activities and funds were released to them to enable them execute these activities. At the time the project ended, none of them had actually come up with these messages, however, the qualitative assessment indicated that the videos had been shown and these had been supplemented with talks by the health workers as they organized community durbars to explain the whole programme. The videos were also shown in some communities on days when drugs were to be distributed to draw the crowds to the meeting places.

Participants were given guidelines on how to come up with songs, role-plays, posters and stories. In addition, it was mentioned that there are several effective ways of conveying the health information to individuals in the community. They include group discussions, role plays, puppet shows, flannel graph, flip charts, flash cards, pile sort cards, drama, stories, songs, films, radio and television, etc.

Kenya

As in Ghana, filariasis IEC materials were non-existent in the Kenyan site. When discussing the design of the IEC materials, the research team was requested to look for possible pictures and provide them to the DHMT who, in consultation with the District Health Education Officer and after careful consideration, chose the ones which they thought were appropriate and made several drafts before the final copies were produced. The DHMT, through the DCC, then asked the research team to make arrangements for printing in Nairobi. The IEC materials (a poster and a leaflet) contained basic information on filariasis. Included was the life cycle, background, causative agent, transmission, pathogenesis and control by chemotherapy. The information was conveyed in coloured pictures. The captions in the posters were in Kiswahili, the national language, while those in the leaflets were in English. Both the posters and the leaflets were given to the health personnel for use in the sensitization of the communities. Some of the posters were pasted on walls at the dispensaries, the schools and at the trading centres. The leaflets were used by the health personnel for clarification and as reference at the dispensaries.

While 'barazas' ('baraza' is a Kiswahili word for public meetings that are a common way of assembling people for public address and announcements in East Africa) were the main forum for sensitizing and mobilizing the communities, the peripheral health staff also used 'health talks' at the dispensaries. 'Health talks' are scheduled talks that the Public Health Technician uses for conveying public health messages to the communities. School children were also sensitized at morning assembly and used as the medium for taking the messages back home. The health workers used posters and leaflets and also the Public Health Technician moved from house to house sensitizing the community on drug distribution.

- "The health officer was going from house to house, telling people there would be drugs for hydrocele and elephantiasis" (Key Informant)

Drug procurement and distribution

Ghana

The flow of drugs in Ghana from the national level to the lowest level of health implementation is as follows. The drugs are received at the Central Medical stores and each of the pharmacists in the ten regions in the country travel to the national capital to collect their drugs.

At the regional level, district pharmacists then come to the regional medical store to receive their drugs. At the district level, the sub-district heads come for their drugs (the sub-districts have dispensers and no pharmacists). Since this was a research project, the drugs were received at the National Health research unit and the district directors of the health service each sent their district disease control officers to pick up the drugs based on rough estimates of the populations of the ten villages selected to be in the study. The drugs on reaching the district were kept at the DHMT offices and given out to the Health workers for distribution in the field. Basically, there were no problems in procurement and storage of drugs.

It was the health worker who did the distribution in the HST arm. Each community was informed about the day on which they were supposed to have their treatment. The health worker then came in on that day and got the community to gather at one place at which the distribution was done. At the end of the day, the rest of the drugs were given to a community member or the health volunteer to complete the distribution by going house to house. In two of the communities in the HST arm, only people with overt disease had actually received the drug. After the study evaluation, this was rectified and everyone was treated.

Kenya

The normal process for drugs reaching the district level is for them to flow from the CMS at the national level to the district as described. In this study, ivermectin tablets were obtained from TDR and received by the Principal Investigator in KEMRI. The supplies officer at KEMRI prepared a goods received/issued receipt for the research team to deliver the drugs to the pharmacist at the district level. The pharmacist entered the drugs in the inventory and BIN cards. From the district level, the drugs reached the dispensary after going through the normal government procedure of filling in the inventory and BIN cards. The DCC co-ordinated the drug acquisition at the district level and delivery to the dispensaries. It should also be noted that in addition to the ivermectin tablets, drugs (e.g. paracetamol) for managing side-effects, were also provided by the project and delivered to the district level where they went through the same delivery process.

- “At our level, we just received the drugs from KEMRI and like any other drugs used the regular procedure. So the consignment was received in our store. We used BIN cards (a book for recording drugs received). Then we used S I I i.e. a government document issuing system. So we used the S I I for issuing the drugs to the dispensary. When they received the drugs, they entered them in their BIN cards. This is where the process of accounting begins” (Key Informant)
- “All the drugs were stored at the dispensary. The reason is that this is the only place with the storage facilities (dispensary cupboards). There is also a watchman throughout who maintains the security of the area. The watchman is paid by the villagers.” (Key Informant)

In the HST arm, the health worker distributed the drugs to the community at a pre-announced date and focal point, either at the dispensary or at a school. To determine the number of pills to be administered, each individual's height was taken by the aid of a measuring stick. The health worker then handed the pills and a cup of water to the measured individual. Swallowing of the pills was directly observed. Persons who did not make it to the assembly point on the day of drug distribution were free to visit their local dispensary at their own convenience within the stipulated drug distribution period of 1-2 months and take their doses.

Record keeping

Ghana

Records in the HST arm in the north were very well kept because of the advantage of experience with and presence in the area of the Demographic Surveillance System of the Navrongo Health Research Centre. Each distributor had a listing of all the members of their community and they went house to house to give the drugs. There was a section on the form which allowed for comments and there were things like, 'pregnant', 'died', 'moved out of the district' or 'refused treatment' in that section. Their form had the following format:

Community / House number / Name / Age / Number of tablets / Remarks

In the HST arm in the south even though the communities had registers, these were not updated. The distribution was done en mass and the disease control officer just had records which had a recording format like this:

Community / Name of distributor / Number of drugs sent / Number treated

Kenya

Unlike Ghana, record keeping was non-existent and as agreed during the training of the DHMT, the research team was requested to provide record books, pens and pencils while the DHMT in consultation with the District Medical Records Officer (DMRO) designed a format similar to Ghana's but with a few more entries:

Community / House Number / Name / Sex / Age / Relationship to Head of Household / Height / Number of tablets / Remarks

Community-Directed Treatment through the Health Care System (ComDT/HS)

Sensitisation and training at health system level for ComDT

Sensitisation for ComDT was done at the health system level by the research team and in the community by the district health team.

At the health system level, the Regional Directors/Provincial Medical Officer of Health Service and their teams were briefed on the findings of Phase 1 and the plan for Phase 2. There was a lot of discussion on the principles and rationale for filariasis control. A separate day was fixed at which the district level health and political authorities were then contacted and briefed on the concept and objectives of the ComDT using the Onchocerciasis Control Programme in West Africa as an example. They were also briefed on the details of the findings of Phase 1 and plan for Phase 2. The concept of annual single-dose treatment for treating filariasis and other aspects of filariasis control in general, and the possibility of interrupting transmission in a period of 5-7 years if high coverage was achieved were discussed.

The research team then had a meeting with the District Health Management Team and selected staff at health centre level. This meeting discussed similar issues as was done with the Medical Officers, emphasising the burden of filariasis, importance of control, annual mass chemotherapy, drug, dosage and the concept of ComDT. The Health Service was then left to introduce the concept of ComDT to the selected communities.

After the series of meetings, the implementation staff in the selected districts were brought together for training and development of IEC materials and messages. The details of the training and the development of the messages are the same as spelt out in the HST arm. After the training, they dispersed and carried out the sensitisation in the communities.

Sensitisation and training at community level

Ghana

The following steps were taken to contact and initiate ComDT in the communities:

The health worker visited the villages and met the Chief, Assemblyman and other Opinion leaders at a community meeting. The details of the problem of filariasis, necessity and benefits of control were discussed. The concept of ComDT was introduced and the health workers later facilitated a meeting of decision-makers in the community. The meeting discussed the details of the treatment process viz. drugs, dosage, benefits and likely side-effects. The issue of assessing the quantity of drugs required by the communities at village level, evolving mechanisms for drug distribution by the community viz. month, time, duration, selection of distributors, etc. In addition, the supportive role of health services viz. supply of drugs; treatment of side effects; training of trainers IEC material for distributors. The issues of record keeping, transportation of drugs from the District Health Centre to villages and storage were discussed. After this first meeting, all community members came together and selected people who they thought would be capable of handling the whole distribution exercise.

The drug distributors were of varied backgrounds, including civil servants, teachers and unit committee members. Each of them had various reasons for why they thought they were selected to carry out the assignment. They included the fact that they were educated, trustworthy and dedicated, and had been involved in similar activities before. All the unit committee members mentioned that it was their duty to get involved in any activity that goes on in the community. Their special reasons for agreeing to take part in such a programme were that they wanted their community to be disease free, they all have the time and generally do a lot of things for the community.

Basically, the person needed to be educated but, above all, the community members had their own criteria for selecting people to do the distribution.

- “We looked for people who had a good character. The elders in the community are very busy so we selected young people who could read and write to go and learn about the drug and come and distribute it for us.” (FGD)

Another group of people said:

- “Oh, we had a meeting and after explaining the nature of the work, we asked people who thought they could do the work to come forward. Some people volunteered themselves and we all accepted them.” (FGD)

In one of the communities in Ghana, which was divided into zones, each zone used its own criteria to select a distributor. Elections were held and votes were cast and the people who had the most votes were selected.

All the distributors selected in the ComDT/HS arm went for a 2-day training session in their community. All expenses for the training, transportation, feeding, etc., were borne by the communities. According to them, every community has a fund from which it takes money to support community programmes. The health worker in charge of a particular area together with the DHMT conducted the training. The topics covered were:

- Aetiology of filariasis
- Treatment, its benefits and side-effects
- Management of side-effects
- The treatment schedule using height
- Exclusion criteria for treatment
- Record keeping

In all these communities, the number of distributors selected ranged from 2-6. Although all those who were selected were sent for the training, when it came to the implementation, some people who had been trained dropped out for various reasons, which included:

Family problems: Of all the women who were selected to do the distribution, only one (an elderly woman) was able to do it effectively with the help of her educated son. The younger women who were selected in communities where the distribution was done early in the mornings could not leave their homes to participate and therefore left the men to carry out the distribution.

Remuneration/Incentives: After attending the training, some of the distributors dropped out because they felt the amount of work to be done was too much to be done for free. Those who did the distribution alone called for help from the houses they went to as and when they needed assistance.

Kenya

After training the peripheral health staff, participants were requested to go back to the villages served by their dispensaries and during sensitisation 'barazas', request the community leaders to attend a training session at the district headquarters. Training of the community leaders was generally similar in content and form to those given previously to the peripheral health staff except that the language of communication was mostly Kiswahili. At the conclusion of the community leaders training, the leaders were requested to go back to their communities and through more 'barazas' ask the communities to select the Community Drug Distributors (CDDs). Posters and leaflets were used for community mobilization during the "barazas", with the posters being posted at the trading centres, schools and dispensaries. The trained community leaders also used mosques and churches for delivering the ComDT messages to the communities during times of worship.

The criteria for selection of CDDs had to be adhered to (ability to read and write; ability to keep records; trustworthy and willingness to distribute the drugs to all eligible persons in the allocated areas without expecting payment from the project). However, during the training of the community leaders in Malindi, the issue of non-payment of wages to the CDDs was discussed at length as the leaders felt that the CDDs would deserve some kind of motivation for their services. Finally, it was agreed that ComDT was a community project and the community would be at liberty to decide the best way on how to remunerate their CDDs..

- "Yes, as I said, we also trained the chiefs and they helped us by calling barazas (public meetings). We told them about the project. The Assistant chief told the 'Wananchi' (Citizens) about the selection of the CDD's, who we took for training. The Wananchi are the ones who participated with the selection of the CDD's." (Health worker)

Similarly, the training of the CDDs took place at the district headquarters. Each participating village selected two CDDs (to help each other with measurements, drug administration and encourage and support each other during the long, sometimes dangerous walks. Training materials, content and language were similar to that of the community leaders. Training was conducted by the trained peripheral health staff. CDDs were taught to store the drugs away from fire, animals and children. To facilitate easy movement in the community, each pair of CDD was provided with a shoulder tote for carrying the pills, record books, a scooping spoon and the pens. As in the training of the Malindi community leaders, the issue of non-payment came up again during the training of the Malindi CDDs and was handled as before.

- "The manpower is okay but the means of reaching the people remains the major problem. In fact it has discouraged the CDDs. Some suggested to drop out and do away with it since the exercise was voluntary, they never expected it to be that much task and frustrating. In fact I had very rough time trying to convince them to stay on lest they betray me. Therefore, I propose that transport should be given to the CDDs to facilitate movement and encourage them." (Health worker)

Drug procurement, storage and distribution

Ghana

In Ghana, drugs were brought to the distributor and distributed a day after. If there were leftovers, the distributor kept them in cupboard in his/her house for later distribution to those who did not get their drugs. Basically, there were no problems in procurement and storage of drugs.

All drug distributors received help from various people, including young school children who helped with carrying the measurement stick or fetching water for people to take their drugs.

Other unit committee members, some chiefs and elders also assisted in the distribution exercise.

For the ComDT/HS arm, the idea was to leave them to decide on when they wanted the distribution done. Due to delays in receiving the drugs and the drug consignment expiry date, all the communities distributed their drugs within one month of having received them. The process took between 2-14 days depending on the method used.

Distribution varied from community to community. Whenever the distribution was done at a central point, a queue was formed and people came one after the other to take their drugs.

- Some of the communities are divided into sections for easier governance. Each of these sections has its own leaders. Registration, information-gathering and drug distribution were done section by section. The number of distributors selected depended on the number of sections the community had. Here the community members gathered according to sections in one place and received their drugs as their names were called out.
- Going from house to house completed the whole distribution process. People who were not around when this was done later came to the house of the distributor to collect the drug.

- Under no circumstance was the drug given to anyone on behalf of another person. If you were registered in a particular section, you had to take the drugs from only that section or else it would not be administered. The drug distributors for the particular sections were community leaders and could easily identify people who did not belong to their section.

Whenever the supply of drugs ran out, the distributors went for more and appointed another day for further distribution.

Kenya

In Kenya, the procedure was slightly different. The drugs reached the CDDs after going through the normal government procedure of issuing drugs to the dispensary. In some cases, due to lack of transportation at the district level and poor supply of drugs, the health workers at the dispensary had to go for the drugs from the DCC at the district level. They mentioned some of the problems they had to go through.

- “Yes. We did not receive the drugs as it had been promised. We kept on revisiting the dispensary, that is there were delays and postponement of the collection dates due to delays from the supplies at Kilifi.” (CDD)

In some cases, when the stocks run out at the dispensaries, the health worker would go to the DCC at the district level for more supply.

- “I had to use my own transport to Malindi to collect the drugs for the CDDs” (Health worker)

In Kilifi, the health worker funded his transportation to the district level by an alternative means.

- “Then we had to use the dispensary’s money (cost-sharing) to send someone to Kilifi for drug collection”. (Health worker)

The CDDs collected their supplies in batches from the health worker at the dispensary. The health worker also provided the CDDs with empty, plastic medicine containers into which the CDDs were expected to transfer their estimated day supply of pills in order to avoid contamination of pills in the manufacturers containers due to constant opening and closing every day. To prevent contamination of the day supply, the CDDs used a spoon for scooping out the required number of pills per individual. The CDDs observed the swallowing of the pills as they dispensed them. Distribution was house to house with a substantial amount of call backs for those persons who would be missed on initial visits.

Record keeping

Ghana

In Ghana, each of the communities had its own community register. The drug distributors were trained to update this by including the names of all people whose names did not appear in the registers. In addition, they entered the age, sex and house number of all people registered. This was done family by family. Each person was then measured using a stick with various grading into ABCD.

90 -119 cm A (1 Tablet)
 120 -140 cm B (2 Tablets)
 141 -158 cm C (3 Tablets)
 159 cm and above . . . D (4 Tablets)

The book was then ruled into columns to cover the next five years. On the day of the distribution, the number of tablets given was recorded by the name of the person who received the drugs. An extract from one of the books is as follows.

Name	House/No.	age	Sex	Height	1999	2000	2001	2002	2003	2004
Ruth Andoh	A/120	49	F	D	4					
Mark Andoh	A/120	32	M	C	3					

Kenya

In Kenya, during the training of the peripheral health staff by the DHMT, a standard method of record keeping was agreed upon after suggestions from the DMRO. The format was similar to the one reported for Ghana except that there also was a column for side-effects and management. As there were no demographic records for the study communities, it was observed that it would be almost impossible for the community to choose a method of record keeping. Therefore, during the training of the community leaders, the leaders requested help with the method of keeping records and both arms ended up with a similar format except that in addition, the ComDT arm was also provided with a referral card bearing the identification details of those persons who would experience side-effects that the CDD may not manage and who would be referred to the dispensary.

- “One woman concealed that she was pregnant and after taking the pills, she experienced stomach pains. We used the referral card to refer her to the dispensary where her complaint was managed by the health worker.” (CDD)

During the evaluation, both arms reported that they had not experienced any problems with record keeping.

AWARENESS OF DRUG DISTRIBUTION AND ITS PURPOSE

The final evaluation included a household survey in order to assess the awareness of the population of the drug distribution programme and its purpose, and to assess the treatment coverage achieved. The results on awareness are presented here and the treatment coverage results follow.

A questionnaire was administered to the heads of household, or their representatives, of 1,467 households, 715 in Ghana and 752 in Kenya (see table). The mean age of respondents was 48 years for males in both Ghana and Kenya, and 42 and 39 years for females in Ghana and Kenya respectively.

Age and sex of respondents

Age (years)		Male		Female		TOTAL	
		No.	%	No.	%	No.	%
Ghana	<25	31	9.1	48	12.8	79	11.0
	25-34	61	17.9	90	24.1	151	21.1
	35-44	70	20.5	88	23.5	158	22.1
	45-54	58	17.0	53	14.2	111	15.5
	55-64	49	14.4	46	12.3	95	13.3
	65+	72	21.1	49	13.1	121	16.9
	TOTAL	341	100	374	100	715	100
Kenya	<25	27	5.8	43	14.9	70	9.3
	25-34	79	17.0	87	30.2	166	22.1
	35-44	94	20.3	53	18.4	147	19.5
	45-54	89	19.2	45	15.6	134	17.8
	55-64	86	18.5	34	11.8	120	16.0
	65+	89	19.2	26	9.0	115	15.3
	TOTAL	464	100	288	100	752	100

Awareness of drug distribution

Some 88% of the respondents said that they were aware of the drug distribution programme, 83.4% in Ghana and 92.6% in Kenya. However, in both countries there was a highly significant difference between HST and ComDT, with more Heads of Households being aware of drug distribution in the ComDT arm than in the HST arm (see table below). In Ghana, some 24% of the Heads of Household in the HST arm were not aware of the drug distribution, as compared to 10.5% in the ComDT arm. In Kenya, 14.4% were not aware in the HST arm while nearly everybody (99%) was aware of the drug distribution in the ComDT arm.

Awareness of the drug distribution programme

Country		Yes		No		TOTAL	
		No.	%	No.	%	No.	%
Ghana	HST	248	76.1	78	23.9	326	100
	ComDT	348	89.5	41	10.5	389	100
	TOTAL	596	83.4	119	16.6	715	100
Kenya	HST	308	85.6	52	14.4	360	100
	ComDT	388	99.0	4	1.0	392	100
	TOTAL	696	92.6	56	7.4	752	100

The qualitative data suggest that one of the reasons for the greater awareness in the ComDT arm may be the active involvement in the preparatory process of more people at the community level.

All people who took part in the various group discussions in the ComDT arm in Ghana mentioned that they had been informed about the drug distribution and the mode of information took a variety of forms. In every community, the District Director of Health Services or his representatives went to see the chief and informed him about the impending programme. The chief then met with his elders and agreed on a date when the District director would come with his team and explain the purpose of the programme. A Gong-gong was beaten and the people gathered. In all the communities, the unit committee members² were also present. At these meetings, the purpose of the programme was explained and people were allowed to ask questions. The drug distributors were then selected. After their training, the drug distributors got the community together when they got back and explained what they had learnt about the drug, the disease it was meant for, the record keeping process and the side-effects that people should expect after taking the drugs.

The same was true in Kenya;

- “I heard or learnt about the drugs from those who were selected from this village to attend seminars. These are the village elder (Kitsao Kwicha), and Charo Mwavuo (CDDs). A meeting was called by the sub-chief where Kitsao Kwicha and Charo Mwavuo informed the people about the drugs.” (Key informant).

² In Ghana the unit committee is the lowest of governance – it is at the community level. The order is the central government, regional directorate, district assembly and then the unit committee.

Understanding the purpose of Mass Drug Administration

Although respondents in the ComDT arm were more aware of the existence of the drug delivery programme, they were less clear about its purpose than those in the HST arm. The table below shows that, among those aware of the treatment in Ghana, 38% in the ComDT arm did not know its purpose, as compared to 23% in the HST arm. The same difference in relative awareness was observed in Kenya with 29% in the ComDT arm not knowing the purpose of drug delivery as compared to 16% in the HST arm. Both sets of differences are statistically significant ($P < 0.001$).

Purpose of treatment according to respondents who were aware of treatment programme

Country		Elephantiasis		Other		Don't know		TOTAL	
		No.	%	No.	%	No.	%	No.	%
Ghana	HST	169	68.1	22	8.9	57	23.0	248	100
	ComDT	135	38.8	81	23.3	132	37.9	348	100
	TOTAL	304	51.0	103	17.3	189	31.7	596	100
Kenya	HST	255	82.8	4	1.3	49	15.9	308	100
	ComDT	269	69.3	6	1.5	113	29.1	388	100
	TOTAL	524	75.3	10	1.4	162	23.3	696	100

The probable explanation for this difference is that the health staff themselves did the distribution in the HST arm and that they put more emphasis on the clinical issues than the drug distributor in the ComDT arm. In one focus group discussion, the respondents said

- “Yes they explained the type of sickness this drug will cure and this disease is called elephantiasis. It affects our legs and also there are some men who feel something in their stomach and it goes down to their scrotum called ‘etwow’. The medicine cures the disease of the leg and the scrotum” (FGD)

In Ghana, some 10-20% of the respondents mentioned other diseases, some of which were relevant such as onchocerciasis which is or was endemic in some of the study areas.

- “We were told that the drug is for certain diseases like skin problems. When you have a disease in your skin and you take the medicine, it will appear on your skin and you will scratch for a long time but after that, the disease will do away.” (FGD, Ghana)

The community mentioned onchocerciasis probably because some of the health workers and distributors had their training combined with an ongoing training for onchocerciasis control.

In Kenya, some 75% of the respondents knew that the treatment was for filariasis, but there were also a few misunderstandings:

- “For treatment of hydrocele, elephantiasis, body aches and for treatment of worms” (Key informant)
- “Some people ran away from the drug distributors because they thought they were PHTs coming to arrest them for selling fish in unhygienic conditions.” (FGD, Kenya)

TREATMENT COVERAGE BY THE TWO METHODS

The final evaluation included a household survey to assess the treatment coverage achieved in the different communities. A questionnaire was administered to all members of the 1,467 sample households who were present at the time of the survey.

Characteristics of respondents

A total of 6,256 people were interviewed, 2,797 in Ghana and 3,465 in Kenya. The age and sex distribution of these respondents shown in the table below. In both countries there were slightly more female than male respondents (52.8% of respondents were female), but the mean age was the same for the two sexes. Respondents in Ghana were on average some 2.5 years older than the respondents from Kenya (mean age 29.7 years in Ghana and 27.2 years in Kenya).

Age and sex of respondents

	Age (Years)	Male		Female		TOTAL	
		No.	%	No.	%	No.	%
Ghana	5-14	432	33.9	386	25.3	818	29.2
	15-24	239	18.8	278	18.2	517	18.5
	25-34	160	12.6	283	18.6	443	15.8
	35-44	152	11.9	225	14.8	377	13.5
	45-54	108	8.5	149	9.8	257	9.2
	55-64	77	6.0	104	6.8	181	6.5
	65+	105	8.2	99	6.5	204	7.3
	TOTAL		1273	100	1524	100	2797
Kenya	5-14	605	36.0	575	32.3	1180	34.1
	15-24	339	20.2	394	22.1	733	21.1
	25-34	206	12.3	297	16.7	503	14.5
	35-44	166	9.9	206	11.6	372	10.8
	45-54	122	7.3	134	7.5	256	7.4
	55-64	107	6.4	75	4.2	182	5.3
	65+	135	8.0	98	5.5	233	6.7
	TOTAL		1680	100	1779	100	3459

Treatment coverage

All respondents were individually asked whether they had received tablets during the preceding 2-3 months and, if they had, whether they had swallowed them. The results are shown in the table below. It should be noted that in 3 HST villages in Ghana, the survey team discovered that nobody had been treated. The health worker in question had deposited the drugs in the village but had not followed up and all drugs were still at the same location in their original packaging. Confronted with evidence that nobody had been treated, the survey team skipped the coverage interview in these villages. To correct for this, we have added to the column “drug not received” a total of $3 \times 76 = 228$ presumed interviews (76 being the average number of interviews in the other villages).

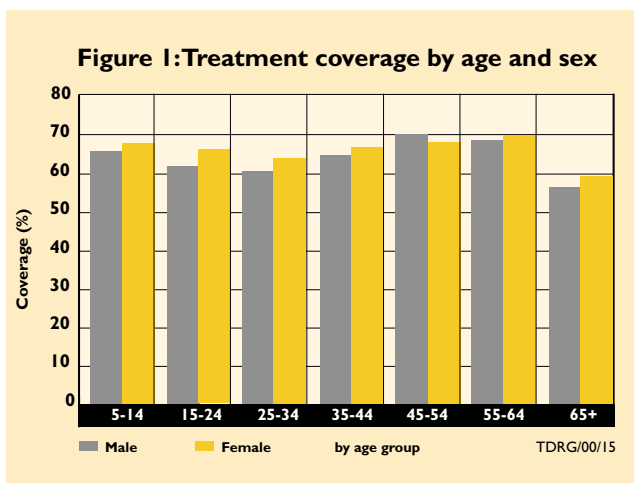
Receipt of ivermectin and compliance with treatment

Country	drug received & swallowed		drug received but not swallowed		drug not received		TOTAL	
	No.	%	No.	%	No.	%	No.	%
Ghana	1780	58.8	13	0.4	1232	40.7	3025	100
Kenya	2336	67.4	15	0.4	1114	32.2	3465	100
TOTAL	4116	63.4	28	0.4	2346	36.1	6490	100

Overall, 63.8% of all respondents had received the tablets, and only very few of those (13 in Ghana, 15 in Kenya) claimed they had not swallowed them. This suggests that failure to comply with treatment once the tablets have been delivered is not an important issue in these countries. This contrasts with results for the Indian study sites where non-compliance was a more prevalent problem.

Based on these results, we defined treatment coverage as the percentage of respondents who reported to have received and swallowed the tablets. Hence, the overall treatment coverage was 58.8% in Ghana and 67.4% in Kenya. It should be noted that this definition of coverage is based on the information obtained from those present at the time of the survey. It may overestimate the actual treatment coverage if those who were absent were more likely to remain untreated.

Figure 1 shows the treatment coverage by age and sex. The coverage is approximately the same for males and females, and there is not much variation with age. Between the ages of 15 and 34 years the coverage is slightly lower, a finding which is often observed in this age group which tends to be economically the most active and the most mobile. The treatment coverage is also distinctly lower above the age of 65 years.



Treatment coverage by age and sex

The table and figure below show the treatment coverage by distribution method in each of the two countries. Both in Ghana and Kenya there was a dramatic difference between the treatment coverage obtained with the two methods. With HST, the treatment coverage was only 43.6% in Ghana and

46.5% in Kenya. With such low treatment coverage, it will certainly not be possible to interrupt transmission and eliminate filariasis. On the other hand, ComDT/HS performed very well and achieved high treatment coverages of 75.7% in Ghana and 88.0% in Kenya. Though it is not yet known precisely what level of treatment coverage is required to achieve elimination, some preliminary computer simulations suggest that a coverage of about 80% may be sufficient to interrupt transmission over a 5 year period. Based on this criterion, it appears that ComDT/HS can achieve the treatment coverage required for the elimination of lymphatic filariasis.

Treatment coverage by drug distribution method

Country	Distribution method	treated		not treated		TOTAL	
		No.	%	No.	%	No.	%
Ghana	HST	693	43.6	896*	56.4	1589	100
	ComDT/HS	1087	75.7	349	24.3	1436	100
TOTAL		1780	58.8	1245	41.2	3025	100
Kenya	HST	799	46.5	919	53.5	1718	100
	ComDT	1537	88.0	210	12.0	1747	100
TOTAL		2336	67.4	1129	32.6	3465	100

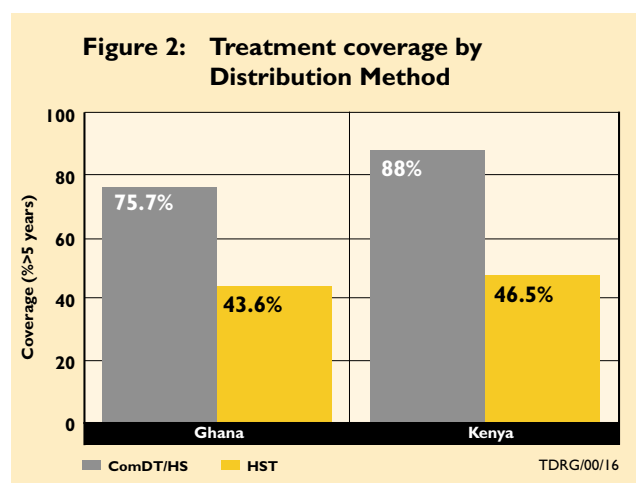
*including 228 presumed interviews in 3 villages where nobody was treated

The Figure 2 (below) on treatment coverage were for all respondents combined. However, it is also of interest to assess the range of treatment coverage obtained in different villages.

The Figure 3 (next page) below shows in the form of 'box-plots' the distribution of village treatment coverage by drug delivery method and country.

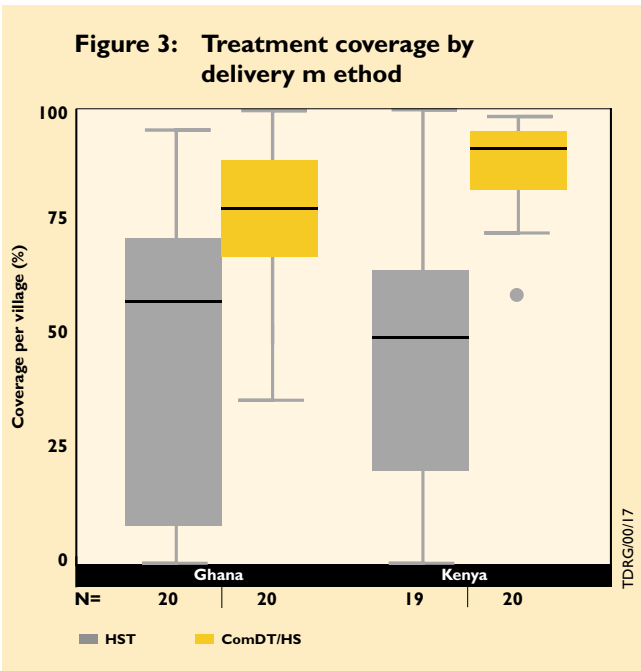
The range in treatment coverage is very large for the HST villages. In a few HST villages, a very high treatment coverage was achieved but there were also some HST villages in both Ghana and Kenya where nobody was treated. The range for the ComDT villages was much smaller and the coverage systematically greater than in the HST villages. In Kenya, the coverage in all ComDT villages was higher than the median treatment coverage of the HST villages.

The difference between HST and ComDT in village treatment coverage is highly statistically significant ($P < 0.001$).



It is known that health care utilization is greatly influenced by distance to the nearest health facility. It was therefore also of interest to assess whether distance to the facility affected the results of the present study, where the health worker has to travel the same distance to the communities to provide treatment (in HST) or introduce ComDT.

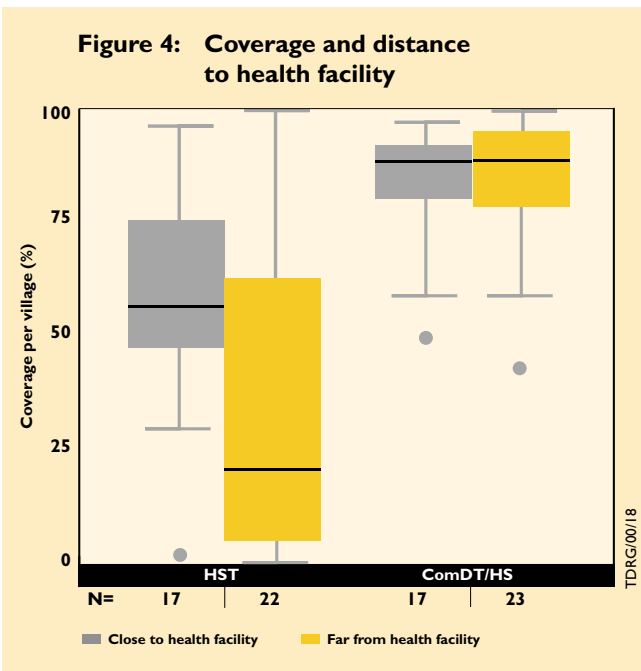
The selection of study villages was stratified by distance to the near-



est health facility with half the study villages located within 5km of the health facility and the other half at more than 5km distance.

The Figure 4 shows, as one would expect, that the treatment coverage among the HST villages was much lower in the distant villages than in those located close to the health facility.

However, among the ComDT villages the distance factor did not seem to play a role and the treatment coverage was the same for villages close or far from the health facility. One possible explanation arising from the qualitative data is that communities in the ComDT/HS are considered more motivated to ensure the collection and distribution of the tablets, even if some of their members have to travel a considerable distance, than are the health workers who are responsible for reaching distant communities in the HST arm, in order to distribute the tablets.



REASONS FOR BETTER PERFORMANCE OF ComDT

A number of issues could be attributed to the reasons why ComDT performed much better than HST. They include

Community involvement

In both arms of the study, there was community involvement to a certain extent. In the ComDT arm, however, the community took control of the whole drug distribution process and could thus better ensure that the distribution was organized and executed in a manner that was most acceptable and convenient to them.

Timing of the distribution and place of abode of distributor

In the HST arm the health worker went to the community after reporting at work and most of the time this was after 8am. In the ComDT arms however, the distribution was often done from dawn till 8am and then after 6pm when people had return from their farms.

- “We distribute at dawn. It was explained that, when you take the drug, you do not eat until after an hour, so it made me distribute it early in the morning” (CDD).
- “We assembled the people at dawn and distributed the drugs and as I already said, it was the teacher who did the work. It was done from house to house, even whilst you’re asleep, he knocks at your door to give it to you” (Key Informant).

Since distributors in the ComDT arm lived in the communities, it was easier for them to work odd hours. None of the implementation health staff lived in the communities. They had to commute to the communities to get the drugs distributed and this had implications for proper coverage rates.

Number of distributors

In the HST arm, the implementation health staff went into the community, did the distribution and left the drugs for people in the community to continue with the distribution. In the ComDT arm however, the number of distributors per community ranged from 1-6 but in each community, other community members who had the time also helped with the registration of community members before the actual distribution took place.

Commitment of those distributing

Whereas the implementation health staff saw the distribution exercise as an additional responsibility and were concerned about the effort involved, the drug distributors once they understood the concept saw it as something which if they did properly would benefit their community.

- “And also I should have been given some fuel money but because I was doing other programmes, I was unable to devote much time to that programme.” (Health worker)
- “I begun with one of the boy’s on my rounds but later, when I go and call him, he does not come, he said that there was nothing in the work like money, so he would not do the work, I also could not stop because I had decided to help out.” (CDD)

Internal checks within the community

Since the distributors came from and lived in the communities, there were internal checks and balances that ensured that the distribution was done properly. Once people heard about the positive effects of the drugs like expelling of worms, etc, they came chasing the distributor if they had not received the drug in their homes.

Socio-political set up

In Ghana, apart from the traditional set up of chiefs and elders, the lowest level of political administration is the unit committee and their role is to make sure that things run properly and everyone is given a fair share of anything in the community. Over 70% of the drug distributors selected by the communities were unit committee members and apart from being community members, they had to make sure they performed so that they would be appointed in subsequent elections.

Satisfaction with ComDT

In both countries, both the implementation health staff and the community were satisfied with the ComDT process.

- “In fact going house to house was the best thing because you reach even those who can not walk. The people liked it because they felt it was not interfering with their daily duties, drug distributors were people they knew and thus had faith in them. I interviewed a few people and they term the drug as a saviour for a problem that had affected them for many years.” (Health worker)
- The evaluation instruments for the present study were not designed to assess the opinion of senior health staff about the ComDT concept. However, informal discussions with members of the DHMTs indicated that they were very satisfied with the concept. They were pleased that the community, with training, had been able to deliver drugs and help them do their work.

CONCLUSIONS AND RECOMMENDATIONS

Main conclusions

- ComDT can be effectively implemented through the regular public health services
- Communities and health staff appreciated the ComDT approach and are willing to take part in the future
- ComDT/HS achieved high levels of treatment coverage that appear adequate for filariasis elimination
- The treatment coverage achieved with HST was poor and insufficient for filariasis elimination
- HST coverage was particularly poor in villages located more than 5km from a health facility, but distance did not affect treatment coverage in the ComDT/HS arm
- A quarter of the respondents in the HST arm, and one third on those in the ComDT/HS arm, did not know the exact purpose of treatment
- Virtually all people who received drugs swallowed them, and compliance with treatment was not a problem
- Community Distributors would appreciate some form of incentive or compensation
- IEC messages and materials on filariasis were not available

Recommendations

- Community-Directed Treatment, implemented through the Health Services, is recommended for drug delivery for filariasis elimination in Africa
- It should be explored to what extent the approach of ComDT/HS is relevant for drug distribution for other endemic diseases, and how the element of implementation through the Health Services can strengthen ComDT in onchocerciasis control.



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