



## Achievements, Challenges & Strategies - Some Spotlights on Onchocerciasis Control in Uganda

Peace Habomugisha\*

### Introduction

"Onchocerciasis endemic districts will continue in partnership with other institutions and individuals committed to fight the disease. They will endeavor to make sure that the people know and understand their roles in this battle." This was said by the LC V Chairperson of Kanungu District, Mrs. Josephine Kasya, while opening a meeting of the political and technical leaders of "phases 3 and 4 districts", which was held on 29 April 2004 in the district's council hall. Present also were such other resource persons as Dr. Andrew Byamungu and Peace Habomugisha. This text's pages bring us the briefest of summaries of what was the most outstanding dimension of the seminar. Namely the addresses that were given by Kasya, Byamungu, Habomugisha and various District Onchocerciasis Coordinators (DOCs), which we present in that order. Our highlights close with a list of challenges typical of almost all the different districts in question, a roll of proposals for the road ahead and an overview of the workshop. Before delving into the particulars, let us note that Kanungu lies in Western Uganda. On its northern and eastern ends it is bordered by Rukungiri, by Kabale to the South, Kisoro in the Southwest and the Democratic Republic of Congo on its western front.

### Focus on Major Speakers

#### Kasya against her Background as Political Leader

Despite that Kanungu District was only about 3 years old, said Kasya, it had managed to carry out a number of onchocerciasis-related activities, to wit:

- The DOC has sensitized the district's council members about the magnitude of the problem.



Some of the participants who attended sustainability workshop in Kanungu district

- A budget has been allocated for activities of the program.
- A radio talk show has been sponsored on the local FM station (Radio Kinkizi) to educate people about the matter; and the response, judging by the many phone calls during the programs, has been good.
- The council works hand in hand with the technical staff to realize the activities.

The Chairperson, however, cited and elaborated on challenges they were faced with:

- Execution of the activities is very expensive. She therefore appealed to the workshop participants to look for ways of sustaining the work.
- There is need for concerted effort to inform people about the treatment of onchocerciasis, especially where and how they fit in this scheme.
- Achievements made so far stand threatened by the possible pull out,

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Published by: Global 2000  
River Blindness Program  
and Vector Control Division,  
Ministry of Health,  
Plot 15 Bombo Road  
Typeset by: Global 2000,  
River Blindness Program;  
P. O. Box 12027, Kampala  
Tel: 256-41-251025  
Fax: 256-41-349139

\* An earlier draft of this compilation received from Julie Gipwola much-needed support. For this help, the compiler is most grateful.

by some parties, from the partnership. She appealed to such bodies, however, not to withdraw abruptly but gradually so that the district council can best plan how to integrate the onchocerciasis program into its routine.

### **Byamungu on Sustainability and Integration**

In his opening remarks, Dr. Andrew Byamungu, of Uganda's onchocerciasis control department, under the Health Ministry, hailed Kanungu district for her high level of commitment, by word and deed, to the control of onchocerciasis. He called upon other Ugandan districts, where the disease is also to be found, to emulate Kanungu.

A paper, "Sustainability of CDTI in the Post-APOC Era – Challenges of Integrating CDTI within the Primary Health Care Structure", was presented by him. The objective of the African Program for Onchocerciasis Control (APOC), by the end of the project's 5<sup>th</sup> year, he said, is to establish an effective and self-sustaining community-based ivermectin distribution system throughout onchocerciasis endemic societies. The project aims, if possible, to eliminate the blackfly, and hence the disease, by using environmentally safe vector-control methods in selected foci.

Sustaining CDTI after APOC has ceased to fund it, noted Byamungu, was going to be a real challenge to the national and district health system managers because of limited resources, considerable lack of political will, poor community mobilization, and limited technical management of the program, especially at the district level. Integration of CDTI programs, in the mainstream routine of the district health team (DHT), was certainly the way forward for the sustainability of these activities in post-APOC time, he emphasized.

The speaker observed that integration is a dynamic and fluid process that requires constant innovations so as to address the challenges of the day. During the post-APOC period, he underscored, CDTI execution was likely to differ from area to area and, at times, from the recommendations stipulated in the CDTI implementation guidelines made by APOC. He noted that integration of

CDTI within the primary health care (PHC) structure means implementation of CDTI activities using resources earmarked for other PHC interests such that limited or no resources would be required exclusively to fulfill CDTI goals.

Byamungu said that it is therefore important for district health managers to integrate CDTI activities in the PHC structure both at the planning and the implementation levels, highlighting areas within the structure where integration is feasible. Furthermore, he made mention of the many opportunities that the health systems and service managers could exploit to have CDTI integrated within the PHC edifice. As examples, he cited decentralization and poverty eradication and action plan (PEAP) as well as the existence of community-based organizations (CBOs) and other community programs that offer health-related services. He, however, noted that there were various threats and weaknesses within and outside local governments, which could seriously hamper the prospects of CDTI integration into the PHC order. Such, clearly, are constraints that can obstruct CDTI sustainability for years long after APOC's withdrawal.

### **Habomugisha with More on Matters of Sustainability**

Also speaking at the Kanungu conference, the Uganda Country Representative of The Carter Center Global 2000, Peace Habomugisha, commended the district leaders, attending the gathering, for their hard work. Because they are policy makers and implementers, she expressed concern about their low participation in advocacy meetings, however. She wondered how the Kanungu and similar meetings could make big impact without input from the majority of leaders of the different onchocerciasis-infected districts.

Sustainability of CDTI, during the post-APOC epoch, was the subject of Habomugisha's study, which she delivered to the workshop. Following APOC's definition of sustainability, she explained that "CDTI activities in an area are sustainable when they continue to function effectively for the foreseeable future, with high treatment coverage, integrated into available health care services, with strong community ownership, using resources mobilized by the community and the government" (APOC, Feb. 2004).

Projects, which are likely to be sustainable, she said, are judged not only according to their effectiveness, efficiency, simplicity and integration into the routine running activities of health services. Their potential also is considered in terms of two other things: staff willingness to accept CDTI as a regular activity, which they would continue to do even in the absence of additional material rewards; and readiness, by a given community, to see, as their own, the onchocerciasis project in their area and to assume responsibility for it.

Sustainability, according to Habomugisha, is promoted by several interrelated factors, among them the following: our individual and corporate understanding of health care, administrative and community structures and their functional linkages, our guarantee that each level in the health care system is committed to the responsibilities with which it is charged, our use of a monitoring tool annually to collect data and learn from it what works and what does not (in order to do such things as generating new ideas), our integration of community-based health care services and development programs into community-directed approaches, as well as ensuring bi-annual or annual meetings, which include stakeholders at higher and lower levels of different administrative, health care and community structures.

On evaluation of CDTI projects, she explained the need for doing so as a way of ensuring sustainability once APOC funding comes to an end. A style of planning, it facilitates mobilization of resources and sets in place the routines that ensure the continuation of onchocerciasis control. According to APOC, projects can successfully be evaluated using specific monitoring indicators. These are some of the traits of CDTI – challenges, weaknesses, failures, strengths and successes included – as it is implemented and as it grows or diminishes in size and viability terms, namely: planning, leadership, observation and supervision, health mobilization (by education and sensitization), Mectizan procurement and distribution, training, financing, transport, human resources and coverage.

Habomugisha revealed that APOC would not support problematic projects

beyond five years after taking them on. Those that show progress towards sustainability will, however, not be abandoned completely: to them APOC may give additional backing in technical terms. This may include assistance with replacement of capital equipment, capacity building to strengthen sustainability, advocacy with the aim of committing African governments to the fight of the disease, external monitoring and evaluation, and operational research.

Participants were further briefed, by the presenter, on possible extra APOC support for the 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> years. Qualifying districts have to meet these requirements: they must have a 3-year, post-APOC sustainability plan; a district's national government must be able to release funds budgeted by it for CDTI activities; evidence that funds and other resources set aside for CDTI have been used for planned programs; as well as implementation of recommendations by external monitors for the 5<sup>th</sup> year, and, where applicable, for year three.

#### **District Highlights**

Besides Kanungu, other districts represented at the April 29 seminar were Adjumani, Apac, Moyo, Yumbe as well as Nebbi (all in northern Uganda), Mbarara and Kibale in western Uganda. Yumbe and Kibale, unfortunately, never had time to highlight their program performance. For the whole of the first lot, which were able to do so, it is to their DOCs, as hinted before, that we are particularly indebted: From Kanungu we had Lauriano Hakiri, Mbarara (Benard Abwang), Apac (Charles Apat), Adjumani (Richard Amola), Moyo (Nicholas Ogweng) and Nebbi (Dickson Unoba). To the highlights we now go.

#### **Kanungu District**

- Health education has been carried out effectively with the help of the DHT using information, education and communication (IEC) materials that were distributed for the purpose. This has partly been responsible for the attainment of high treatment coverage.
- Workshops with district and sub-county leaders have been held. This has enhanced awareness and increased interest in supporting CDTI work.

- Integration of onchocerciasis activities in PHC is in evidence.
- One focal person at each health sub-district (HSD) as well as many health workers, community-directed health supervisors (CDHS) and community-directed health workers (CDHWs) have had training in CDTI.
- Operational research, on sustainability of CDTI in the district, has been conducted; and a report is yet to be made available.

#### **Mbarara District**

- Funds have been released for integration of the onchocerciasis program in the district's work plan.
- 35 communities have done community self-monitoring using their own monitors and indicators.

#### **Apac District**

- The district, which has 9 onchocerciasis endemic communities, last year (2003) achieved 99.5% coverage of ultimate treatment goal (UTG) due to a high level of commitment of the different stakeholders at all levels.
- Intensive health education was carried out through video shows.
- Advocacy meetings have been held and facilitated by the Chief Administrative Officer (CAO).
- Onchocerciasis has been integrated in the district's work scheme; and monetary and other contributions are already forthcoming from the district.

#### **Adjumani District**

- 77 health workers have been trained.
- A village health team (VHT) for integrated disease control has been created in each community; and the majority of the CDHS and CDHW have been absorbed into it.
- Primary health care (PHC) funds are used to cater for all health-related activities including CDTI.
- Advocacy for CDTI has been done jointly with the DHT and the Assistant Chief Administrative Officer (ACAO). The resulting impact has been felt: for example, 2 sub-counties, Adropi and Adjumani Town Council, have fulfilled their pledges of 84,000/= and 132,000/= respectively.
- Ivermectin procurement and supply is done through the health service delivery system.

#### **Moyo District**

- The district has recruited more health personnel – thereby reducing the workload of the DOC.
- There is a focal officer, for onchocerciasis control, at every health unit.

ciasis control, at every health unit. This has enabled the program to be more effective.

- Implementation of CDTI is now being done through decentralized health, political and other structures.
- CDTI activities have been integrated with other health programs such as sleeping sickness, schistosomiasis and malaria.

#### **Nebbi District**

- For the financial year 2003/04, the district released funds for CDTI at two levels: the district level, shillings 1 million; and the sub-county level, for the five sub-counties of Kango, Nyapea, Wadelai, Jangokoro and Paidha, shillings 857,000.
- CDTI has been integrated into the health care delivery structure.
- 112 health workers have had training in CDTI.
- Sub-counties have integrated CDTI into their budgets.

#### **General Challenges to CDTI at District Level**

- □ Some community members still do not know about their role within CDTI. Hence the need for more health education.
- □ Rebel activities in some districts, such as Adjumani and Apac, are a hindrance to CDTI work.
- □ Data collection from communities is becoming a problem as most sub-counties have not honored their pledge to support community supervisors.
- Little political support, especially at the LC 1 level, e.g. in Aliba, Gimara and Itula sub-counties in Moyo District, is a notable drawback.
- □ While the district health teams (DHT) usually participate in programs where they are facilitated financially, onchocerciasis activities often have meager or no funds assigned to them.
- □ There are programs that still pay some community members for drug delivery, for example the mass immunization campaigns against measles and polio. This tends to demoralize CDTI drug distributors who are generally never paid for their services.
- □ Transport is not readily available

for CDTI supervision across villages, which are too numerous.

- □ Health workers are too few and, because they are heavily loaded with their routine duties, they make little or no time for CDTI work, which is partially or barely integrated in their regular schedules.

#### Way Forward

At the end of the workshop, participants suggested possible solutions to CDTI problems and challenges:

- □ Local governments should solicit funds from other sources to sustain CDTI in their districts.
- □ National Onchocerciasis Task Force (NOTF) ought to consult with districts on how CDTI can be properly implemented.
- □ In the interest of effective service, the procurement, storage and distribution of ivermectin should involve the various stakeholders at the relevant district levels.
- □ NOTF should continue conducting advocacy meetings for district leaders and lobbying in order to make them more informed about integration and sustainability of CDTI.
- □ Nebbi District will host the next meeting in 2004.

#### Overview of Workshop

Workshop proceedings give mixed but by no means surprising signals of the status of onchocerciasis control in the given districts. Strides, minor or great, have been taken in some areas. Achievements, dazzling and promising or otherwise, are boasted. Problems and challenges, of varying magnitude, do, however, still stalk the anti-onchocerciasis course. All these, nonetheless, are basically no new indices. Previous monitoring and evaluations, by internal and/or external personnel, show a generally similar trend for the northern and western, as for other onchocerciasis endemic, Ugandan districts. Ivermectin records for Uganda, over the past decade and more, copies of which are deposited in the country's Ministry of Health, bear out this observation. The one inspiring thing, for each of the onchocerciasis-affected districts, stands out: Any treatment coverage achieved, any advocacy and assessments undertaken within and without workshops – these and other phenomena like them increase public alert-

ness to the affliction and the need to rein in the disease.

The Kanungu meeting, like many a comparable forum in older years, also partook in another trait of clearly important interest. It was yet one more avenue by which CDTI fostered the now more urgent call for integration of community-directed disease con-

trol into the public health care system.

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## Community-Perceived Benefits of Ivermectin Treatment in some Onchocerciasis Endemic Communities of Uganda

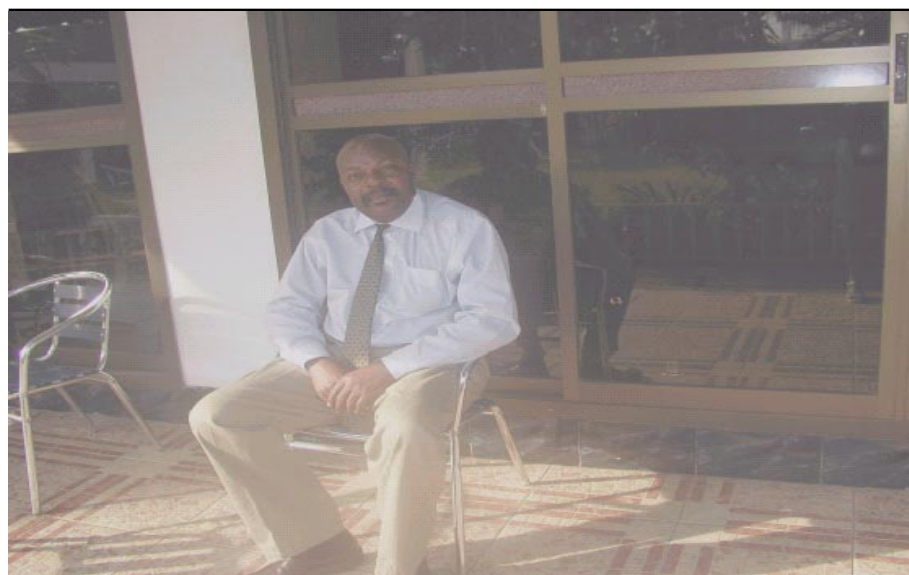
Dr. Richard Ndyomugenyi

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#### Introduction

Onchocerciasis is a parasitic disease of man caused by *onchocerca volvulus*. It is a classic end of the road disease, which affects rural, impoverished people with little access to health care and no political clout. In Uganda, the disease causes onchocercal skin disease characterized by severe skin itching and ugly skin lesions (Kip et al., 1992). Itching can be so severe that it disturbs sleep, concentration and work (WHO, 1995). Other complications of the disease

et al., 1989). Since 1987, a private pharmaceutical company based in the U.S.A., Merck & Inc., has provided ivermectin free of charge to all onchocerciasis endemic countries. The company has pledged to continue donating free ivermectin as long as is needed. Ivermectin is a microfilaricidal drug and by reducing microfilarial load in the infected individuals, ivermectin reduces transmission of the infection and prevents onchocercal blindness and skin



Dr. Richard Ndyomugenyi

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that have been observed in high numbers in onchocerciasis endemic areas of Uganda are epilepsy and retarded growth (Ovuga et al., 1992; Fischer et al., 1993). The manifestations of the disease are caused by microfilariae and are directly related to the intensity of the infection in the community (Thylefors and Brinkmann, 1997; Remme

disease. Repeated ivermectin treatment is also believed to have an effect on the fecundity of the female adult *O. volvulus* worm (Schulz-Key et al., 1986). To eliminate onchocerciasis as a public health and socio-economic problem in endemic communities, ivermectin treatment must continue for at least 15 years,

with stable annual treatment coverage of at least 65% of the total population. Therefore long-term compliance is important to achieve elimination of the disease. Some studies have examined the impact of ivermectin treatment on community microfilariae load (Ndyomugenyi, 1998; Remme et al., 1989; Boatin et al., 1998) but few studies have examined community-perceived benefits of ivermectin, which is important for sustained high treatment coverage. This study was conducted to examine the perceived benefits of ivermectin treatment in rural onchocerciasis communities of Uganda, where ivermectin distribution was ongoing for the past 11 years, to provide information that could be used in designing appropriate health education messages that could enhance continued ivermectin treatment.

## Materials and Methods

### Study Area

The study was conducted in Kyenjojo district where ivermectin treatment had been the only intervention to control onchocerciasis since 1991 – an effort that was supplemented with vector elimination in 1995. Onchocerciasis in the area, before ivermectin treatment started, was 80% and the disease manifested itself as onchocercal skin disease characterized by severe itching, ugly skin lesions and epilepsy (Kipp et al., 1992). The inhabitants of the area are Batoro (who are the indigenous people) and Bakiga and Bafumbira who have immigrated from Kabale and Kisoro districts, respectively. The main economic activity is agriculture with emphasis on food crops such as sweet potatoes, maize, cassava, beans, groundnuts and bananas. The cash crops are mainly coffee and tea.

### Methods

A questionnaire was developed and pre-tested before it was used. It was administered to randomly selected adults to assess peoples' perceived benefits of ivermectin treatment. The questions included perceived severity of the disease, benefits of ivermectin treatment in terms of disease control, socio-economic factors and whether people were willing to continue taking the drug. Focus group discussions were also conducted for males and females separately using a focus group discussion guide.

## Data Analysis

Non-computerized analysis was used to analyze qualitative data. A code sheet was created following the focus group guide, and data were coded. Then a master sheet analysis was done, giving all the responses from the focus group discussions and in-depth interviews. Responses were interpreted by looking at the patterns in the responses and formulating ideas, which could account for those responses. Methods used included content analysis, ethnographic summaries and use of quotations. Analysis also gave consideration to the actual words used by the respondents, the context, internal consistency and the specific responses. Quantitative data were analyzed using version 6.0 of the Epi-info software package, a creation of the Centers for Disease Control and Prevention, Atlanta, GA, USA.

## Results

Perceived benefits of ivermectin treatment Overall, 151 adults were interviewed and of those 83 (55%) were females. The age in years ranged from 19-84 with a mean age of 39.9. The number of years during which the respondents had received ivermectin treatment ranged from 0-15 with a mean of 9 years. Nearly all, 149 (98.7%), perceived onchocerciasis to be a dangerous disease and the reasons for perceiving so are summarized in table 1. However, after several years of ivermectin treatment, 75.5 % of the respondents perceived that onchocerciasis was no longer a major health problem due to stoppage of skin itchiness (table 1). A woman aged 35 years, who had taken ivermectin for 11 years, had this to say:

I had severe persistent skin itchiness and I used stones to scratch myself and sometimes I would tear my clothes while scratching. I could not dig. It was terrible. I used to spend a lot of money going to hospital in Fort Portal to get medicine for my skin disease. Now I am cured, I can dig and get some money from my crops.

The disease, before control, did not only cause distressful skin itchiness, but also had socio-economic implications and a stigma to the affected individuals. A man aged 35 years, from Byeya village, who had received ivermectin for 11 years, had this to say:

Our skins were very bad. Wherever we would go, people would know that we

were coming from Byeya village because of our bad skins. People used to think that our skins were bad because we were eating wild animals, which were not supposed to be eaten by human beings. People had started refusing to emigrate to this village because whenever they would come and find people with bad skins and scratching themselves, they would wonder what was happening to us and they would continue to Kibale District and settle there. People would refuse to eat with us and would not like to marry girls from this area. People are now marrying from here because girls have good skins.

Another man had this to say about the discrimination of people with bad skins and itchiness:

Some people were being discriminated because people thought that they had Acquired Immune-Deficiency Syndrome (AIDS) due to hair changes and bad skins. After taking the drug, their hair and skins become okay and are now settled well with other people.

Although most people perceived onchocerciasis to be no longer a major health problem due to the reasons summarized in table 1, nearly all, 145 (96%), were willing to continue taking the drug as long as necessary until they are completely cured. "Our skins had turned like that of a frog. People still want to take medicine so that they do not get bad skins again," observed a man who had taken ivermectin for 17 years. On the economic aspect of ivermectin treatment, 129 (85%) of the respondents perceived that people are now strong enough to cultivate land and grow crops, which they could sell and get money. A man aged 50 years, who had taken ivermectin for 11 years, had this to say: "No more skin itchiness. Itchiness was severe and women would spend the whole day scratching themselves and could not cultivate the land effectively. Now they are okay and strong and are growing a lot of crops, which we sell and get money."

## Discussion

The disease, prior to control, caused distressful skin itchiness (Fischer et al.,

1993), had socio-economic implications and a stigma to the affected individuals as previously observed in other studies (Amazigo, 1994; Vlassoff et al., 2000). Onchocercal dermatitis is known to interfere with people's concentration and ability to work (WHO, 1995) and when highly prevalent, local people often attribute the symptoms of the disease to witchcraft and move, often to less fertile areas, so reducing productivity further, causing shortage of food and economic collapse (Ndyomugenyi, 1998). Ivermectin treatment relieves the affected people from onchocercal dermatitis and reverses acute dermatitis to normal skin. Community compliance and the effects of ivermectin on skin disease have been described. Most respondents perceived that there was no more skin itchiness and people were strong enough to cultivate land more effectively and grow crops, which they could sell and get money. Although onchocerciasis is known not to cause blindness in this region (Fischer et al., 1993), a big proportion of the people perceived that ivermectin had improved their sight. Although people perceived that ivermectin treatment had stopped itchiness and improved their ability to work, other extra health benefits of the drug, such as its anti-scabietic activity (Nnoruka and Agu, 2001) and its deworming effect, could have also played a big role. Intestinal helminths flourish where poverty, poor nutrition, shortage of drinking water and minimal health care prevail (WHO, 1994), which are the typical conditions where onchocerciasis is also endemic. Intestinal helminths play an important role in the cause of iron deficiency anaemia due to chronic blood loss and reduced nutrient intake (Santiso, 1997). Effectiveness of ivermectin, against ascaris lumbricoides, has been reported to be 100% (Njoo et al., 1993) and 11-100% effective against *T. trichiura* (Njoo et al., 1993; Mart et al., 1996) and 0-20% against hookworm (Richard et al., 1995). Therefore, the effort of the African Program for Onchocerciasis Control, to eliminate onchocerciasis as a public health and socio-economic problem through annual mass ivermectin distribution, could in the long term improve the quality of life, by controlling intestinal parasites and their associated negative con-

sequences on growth and development, of the rural poor populations with inadequate health services.

### Conclusion

Community members perceived that after 10 years of ivermectin treatment, troublesome skin itchiness had stopped and that this stoppage had increased their ability to grow more crops, which they could sell and get money. Despite the members' perceptions that onchocercal skin itchiness, and onchocerciasis in general, was no longer a public health problem, people were still willing to continue taking the drug until they are assured that they are completely cured. Health education, on the need for continued ivermectin treatment, should continue for sustained high treatment coverage.

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**Table 1: Perceived reasons for onchocerciasis as a dangerous disease and why it is no longer a major health problem 11 years after ivermectin treatment in Western Uganda**


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### News Flash – April-June 2004

Working visits, major details of which we now give you, engaged, as always, the Uganda arm of The Carter Center Global 2000 during the just ended quarter.

**April 29-30, 2004:** Peace Habomugisha was among the many invitees, in Kanungu District, for a follow-up workshop on post-APOC CDTI sustainability. A paper, relevant to the subject, was presented by her.

**May 5-8, 2004:** Stella Agunyo flew to Arua District where she spent two days attending a post-APOC workshop, for the districts of Arua, Yumbe and Nebbi, on integration and sustainability of CDTI programs.

**May 18-21, 2004:** Justin Ochaka camped in Gulu. He held talks with the District Director of Health Services on how the health team of the district together with its opinion, political and other leaders could be involved in, and support, CDTI. Again, he met the administration of Bungatira sub-county. This area, he discovered, did, in September 2003, release Uganda shillings 100,000 to support its community supervisors in CDTI work. Ochaka also visited the Palenga Internally Displaced People's Camp, a CDTI beneficiary.

**May 25-30, 2004:** Peace Habomugisha, on foot and by car, traveled parts of Kisoro and Kasese, on APOC's fact-finding mission, to find out how these two districts have been managing their CDTI activities without external support. She was one of a group of monitors drawn from such institutions as Makerere University and the Vector Control Division of Uganda's Health Ministry.

**June 9-12, 2004:** Peace Habomugisha arrived and stayed in Adjumani for a 2-day post-APOC workshop, for the districts of Adjumani and Moyo, on integration and sustainability of CDTI activities.

**June 14-21, 2004:** Justin Ochaka undertook duties in Apac and Gulu districts. In Apac, he had talks with members of the district health team, its political administrative officers as well as with sub-district

health "in-charges" on their involvement in and support for onchocerciasis control. For a period of time, Ochaka was in Gulu for a follow-up on his earlier efforts (May 18-21, 2004) to drum up support for CDTI activities in the district.

**June 14-21, 2004:** Only one or so days after returning from Adjumani, Peace Habomugisha was once more on the move, this time to Nebbi District. Her objective was to see how treatment was going on there. She tracked ivermectin from the district stores through the various health levels down to the communities where treatment is ongoing. She was able to interact with some of the people receiving treatment. In addition, she visited the office of the District Director of Health Services as well as offices of some of the district administrators where issues pertaining to integration and sustainability of CDTI were discussed with her.

**June 24-29, 2004:** Stella Agunyo, Justin Ochaka and Harriet Sengendo did fieldwork in Sironko District. Their activities, by and large, aimed to initiate the area's new DOC. The team together with the DOC retrained 217 community supervisors and 15 health workers from 4 health units. These people were re-educated in several vital things: the roles of various partners in the CDTI program, matters of its sustainability and integration into Uganda's public health system, as well as record keeping.

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