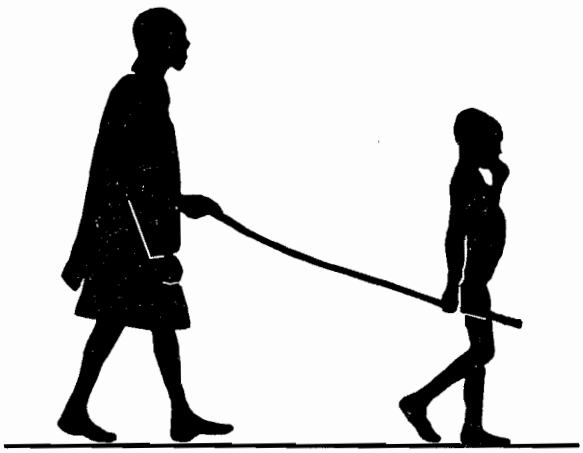


Summary
1998 Global 2000 River Blindness Program
Program Review for Nigeria, Cameroon, Uganda, Sudan, and OEPA
17-19 February 1999
The Carter Center
Atlanta, GA

October 10, 1999

TABLE OF CONTENTS

Acronyms

AAH ..... Aktion Afrika Hilfe
arv ..... at-risk villages (villages requiring community-wide active mass therapy *or* clinic based treatment)
ATO ..... Annual Treatment Objective
APOC ..... African Program for Onchocerciasis Control
CAPP ..... Centre d'Approvisionement Pharmaceutique Provincial
CBD ..... Community-based Distributors (pre-APOC strategy)
CBM ..... Christoffel Blindenmission
CDC ..... Centers for Disease Control and Prevention
CDD ..... Community-Directed Distributors (APOC strategy)
CDTI ..... Community-directed Treatment with Ivermectin
CFA ..... Central African Francs
CNS ..... Central Nervous System
earp ..... eligible at-risk population
DEC ..... diethylcarbamazine
FMOH ..... Federal Ministry of Health of Nigeria
GIS ..... Geographic Information System
GOS ..... Government of Sudan
GRBP ..... Global 2000 River Blindness Program of The Carter Center
GTZ ..... Gemeinschaft fur Technische Zusammenarbeit
HKI ..... Helen Keller Worldwide
HNI ..... HealthNet International
hrv ..... high-risk villages (villages requiring community-wide active mass therapy)
HQ ..... Headquarters
IDB ..... InterAmerican Development Bank
IDP ..... Ivermectin Distribution Program
IEC ..... Information, Education, and Communication
IEF ..... International Eye Foundation
IMA ..... InterChurch Medical Assistance
IMC ..... International Medical Corps
IACO ..... InterAmerican Conference on Onchocerciasis
LCIF ..... Lions Clubs International Foundation
LGA ..... Local Government Area
MDP ..... Mectizan® Donation Program
Mectizan® ..... ivermectin (Merck & Co.)
MOH ..... Ministry of Health
MSF-B ..... Medecins sans Frontiers-Belgium
NGDO ..... Nongovernmental Development Organization
NOCP ..... National Onchocerciasis Control Program
NOTF ..... National Onchocerciasis Task Force
OEPA ..... Onchocerciasis Elimination Program of the Americas
OLS ..... Operation Lifeline Sudan

OPC	l'Organization pour la Prevention de la Cecité
PAHO	Pan American Health Organization
PCC	Program Coordination Committee of OEPA
PCR	Polymerase Chain Reaction (PCR)
PHC	Primary Health Care
RBF	River Blindness Foundation
REA	Rapid Epidemiological Assessment
REMO	Rapid Epidemiological Mapping of Onchocerciasis
SAE	Severe Adverse Effect
SB	SmithKline Beecham
SMTC	Sustainable Management Training Center, Jos, Nigeria
SRRA	Sudan Relief and Rehabilitation Association
SSI	Sight Savers International
SSOCP	South Sudan Onchocerciasis Control Program
SVE	Sentinel Village Evaluation
TCC	Technical Consultative Committee of APOC
TX	treatment
UNICEF	United Nations Children's Emergency Fund
UTG	Ultimate Treatment Goal
WHO	World Health Organization
WVI	World Vision International

ABSTRACT

The vector borne parasite *Onchocerca volvulus* infects about 18 million people in 37 countries, 750,000 of whom are blinded or severely visually impaired. Periodic mass treatment with ivermectin (Mectizan®) in disease-endemic communities prevents eye and skin disease caused by this infection. As part of a global effort to control onchocerciasis by the year 2007, the Global 2000 River Blindness Program (GRBP) of The Carter Center collaborates with the ministries of health of ten countries, maintains field offices in Guatemala, Cameroon, Nigeria, Sudan, and Uganda, and belongs to international coalitions that include the Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO), the World Bank, the InterAmerican Development Bank, Merck & Co., international bilateral donors, and other nongovernmental development organizations. Special GRBP partners include the Lions Clubs International Foundation (LCIF), and the African Programme for Onchocerciasis Control (APOC).

The Carter Center hosted its third annual Review for 1998 program activities of its Global 2000 River Blindness Program on February 17-19, 1999 in Atlanta. The objectives of the Program Review were to: 1) assess the status of each program, 2) assess impediments and problems in program implementation and potential solutions, and 3) promote sharing and standardization of information. Each GRBP-assisted program reported on Mectizan® treatments provided, training, research and development activities, Mectizan® importation and security, and administrative issues. The Africa programs also reported on their APOC experiences, and the Nigeria program reported on a new initiative for lymphatic filariasis elimination and schistosomiasis control. Key aspects of the discussions are summarized in this report.

Since its launching in 1996, GRBP has assisted in providing over 14.7 million Mectizan® treatments. In 1998, 5,626,767 persons were treated (96% of the 1998 annual treatment objective) in GRBP-assisted programs; this represented a 9% increase in treatments over 1997. As in previous years, 69% of all GRBP treatments were in Nigeria. Of the treatments in 1998, 3,766,868 (67%) were accomplished in partnership with the LCIF Program in Nigeria, Cameroon, and Sudan. The GRBP annual treatment objective for 1999 is about 6.9 million treatments, a 21% increase over 1998 treatments. Priorities for GRBP in 1999 include: 1) maximizing treatment and health education efforts relative to annual treatment objectives and full treatment coverage goals, 2) monthly reporting of Mectizan® treatments, 3) the transition from 6-mg to 3-mg Mectizan® tablets, 4) documenting interruption of transmission in the Americas, and 5) adapting Mectizan® distribution and health education methods to other diseases.

EXECUTIVE SUMMARY

The Program Review: The Global 2000 River Blindness Program (GRBP) hosted its third annual Program Review on February 17-19, 1999 at The Carter Center in Atlanta. The review is modeled after similar reviews developed for national Guinea Worm Eradication Programs by The Carter Center's Global 2000 program and CDC, beginning with Pakistan in 1988. The main purposes of the review, which was chaired by Dr. Frank Richards (Technical Director, GRBP), were to assess the status of each program and to determine impediments and problems in program implementation. In attendance (Annex 1) were GRBP country representatives Dr. Albert Eyamba (Cameroon), Mr. Moses Katabarwa (Uganda), Dr. Emmanuel Miri (Nigeria), Dr. Mauricio Sauerbrey (Onchocerciasis Elimination Program for the Americas [OEPA]), Prof. Mamoun Homeida, (Chairman, National Onchocerciasis Task Force [NOTF], Sudan), Ms. Irene Goepp (Program Manager, HealthNet International [HNI], Sudan), and Global 2000 Atlanta headquarters staff. Special guests included Dr. Brian Bagnall (Director of Lymphatic Filariasis, SmithKline Beecham [SB]), Mr. Ross Cox (Deputy Director of Global Health, CDC), Dr. Charles Mackenzie (Michigan State University expert on Sudan), Mr. Jeremy Horowitz (Helen Keller International [HKI]), and representatives from the Mectizan® Donation Program at the Task Force for Child Development and Survival (Drs. Stefanie Meredith, Bruce Dull, and Mary Alleman).

Each participant had three hours to present on his/her program (Annex 2), with discussion focused on treatment and training activities, sustainability issues, status of Mectizan® stores, epidemiological assessment activities, operations research, and administrative issues. Key aspects of the Program Review, supplemented by updated treatment data provided since the meeting, are summarized in this report, as are recommendations for GRBP actions in 1999.

River Blindness: The Disease and its Control: Infection with the vector-borne parasite *Onchocerca volvulus* (human onchocerciasis) is characterized by chronic skin and eye lesions. The World Health Organization (WHO) estimates that at least 17.7 million people are infected, 500,000 are visually impaired and another 270,000 are blinded from onchocerciasis in the 37 endemic countries. Approximately 123 million people live in endemic areas worldwide and are therefore at risk of infection; over 95% reside in Africa. Onchocerciasis is transmitted by small blackflies that breed in rapidly flowing rivers and streams, thus leading to the common name for the disease, "river blindness." The adult parasites are long-lived (between 8-15 years), and the embryos (microfilariae) produced by female worms enter into the skin and eyes and cause inflammation and disease. Ivermectin (Mectizan®), a microfilaricidal drug that can be given as a single oral dose annually in "mass" community-based treatment programs, while not being curative can prevent disease from developing in those who are infected. In 1987, Merck decided to donate Mectizan®, for as long as necessary, to all people affected by onchocerciasis. This donation stimulated a global initiative to globally control onchocerciasis using a strategy of community-based treatment in severely affected areas.

The Carter Center and River Blindness: In 1987, Merck approached then executive director of The Carter Center Dr. William Foege, for assistance in organizing the global distribution of Mectizan®. The Mectizan® Donation Program (MDP) was created in 1988, and housed at the

Task Force for Child Survival and Development, an independent partner of The Carter Center. Over the past decade, the effort surrounding the donation culminated in what is now considered to be a model of how industry, international organizations, donors, and national ministries of health can work successfully together toward a common goal. The global initiative has grown to one that has enabled about 20 million treatments per year since 1996 and over 100 million treatments since the MDP began.

In 1996, The Carter Center expanded its role in the coalition fighting river blindness by acquiring most of the operations of the River Blindness Foundation (RBF), founded by John and Rebecca Moores in 1990. The GRBP was so formed and headquartered in Atlanta, with field offices in Nigeria, Uganda, Cameroon, and Guatemala City. The program has the primary aim of helping local residents and health workers establish and sustain Mectizan® distribution and health education in communities at greatest risk for skin and eye disease from onchocerciasis. The office in Guatemala serves the Onchocerciasis Elimination Program for the Americas (OEPA), which coordinates activities in all six onchocerciasis-endemic countries in the Americas (Brazil, Colombia, Ecuador, Guatemala, Mexico, Venezuela). In 1997, GRBP expanded to a collaborative program in Sudan (with support of Lions Clubs SightFirst) as a part of The Carter Center's peace initiative and Guinea worm disease eradication efforts there.

Treatments Assisted by the Program: Summary tables of monthly treatments of eligible persons at-risk and villages by program are provided for the years 1997 and 1998 (Tables 1 and 2). Since its launching in 1996, GRBP has assisted in providing over 14.7 million treatments with Mectizan® (Figure 1). In 1998, 5,626,767 eligible at-risk persons (earp) were treated with Mectizan® in GRBP-assisted programs (96% of the 1998 treatment objective); this represented a 9% increase in treatments over 1997. Most (69%) treatments were in Nigeria (Figure 2). Of the treatments in 1998, 3,766,868 (67%) were accomplished in partnership with LCIF, which is a major partner with The Carter Center in Nigeria, Cameroon, and Sudan (Figure 3).

The GRBP Annual Treatment Objective (ATO) for earp projection for 1999 is 6.9 million treatments with Mectizan®. Table 3 shows GRBP ATOs for earp, at risk villages (arv-villages requiring either clinic-based or community-wide active mass therapy) and high risk villages (hrv-villages requiring community-wide active mass therapy). GRBP projected a 33% growth in earp treatments between years 1996-97, a 7% increase for 1997-98, and a 15% increase between 1998-99. Many GRBP-assisted programs (Nigeria, Uganda, Mexico, Ecuador, and Colombia) have or are reaching full treatment coverage (the "ultimate treatment goal") in their areas of operation and expect no significant growth in future years. GRBP-assisted areas in need of ATO expansion toward full coverage include Cameroon, Sudan, Venezuela, Guatemala, and Brazil.

Partnerships: The GRBP of the Carter Center works in partnerships at all levels. In all cases, the program works with ministries of health (MOHs) and their national onchocerciasis control programs executed within and through the indigenous primary health care system. GRBP staff work in the field with the rural communities using information, education, and communication techniques (IEC) to improve understanding and empowerment of people to be full partners in the program and the drug delivery process. GRBP technical staff are housed in the Division of Parasitic Diseases at CDC, and work closely with the Mectizan® Donation Program at the Task

Force for Child Survival and Development.

Partners in the African Programs: In Africa, GRBP partners include the MOHs in host countries (Cameroon, Nigeria, Sudan, and Uganda), UN organizations (WHO and the World Bank), and other nongovernmental development organizations (NGDOs). A most important and special partnership for The Carter Center in Africa is with the Lions Clubs, which have supported GRBP-assisted activities in three countries (Nigeria, Cameroon, and Sudan). In Nigeria and Cameroon, local Lions members are actively involved in the administration, mobilization, and monitoring/evaluation activities of the programs. GRBP is one of many members of an international coalition of NGDOs (the NGDO Coalition for Ivermectin Distribution) that includes Christoffel Blindenmission (CBM), Helen Keller International (HKI), Interchurch Medical Assistance (IMA), International Eye Foundation (IEF), HealthNet International (HNI), Lions Clubs SightFirst (LCIF), l'Organisation pour la Prevention de la Cecite (OPC), Sight Savers International (SSI), and the US Committee for UNICEF. Former President Jimmy Carter played a leading role in assisting the World Bank/WHO to secure resources for a trust fund that supports the APOC. The APOC, a $124 million dollar, twelve-year program launched in 1995, aims to establish what are deemed "community-directed" river blindness treatment programs in an estimated 19 African countries by 2007. Funds are provided for five year projects to ministry of health/NGDO partnerships, after which community treatments would have to continue without further external support. The Carter Center currently has ten projects supported by APOC, in all four countries of its operations (Figure 6). The special role of The Carter Center is its institutional representation on the APOC technical steering committee (the Technical Consultative Committee-TCC). Within the national coalitions, GRBP country representatives currently serve as the chairs of the Uganda and Cameroon national NGDO coordination groups, and in 1998 the Nigeria country representative finished his second two-year term as chair of the Nigeria NGDO coalition.

Partners in the American Programs: The Carter Center provides the administrative framework for the OEPA. Headquartered in Guatemala, OEPA is the technical and coordinating body of a multinational, multiagency coalition working for the elimination of all onchocerciasis morbidity from the Americas by the year 2007. Regional technical and programmatic goals are developed by a Program Coordinating Committee (PCC) with representation from key members of the initiative, and on which The Carter Center holds an institutional seat. The Carter Center works with the Pan American Health Organization (PAHO), the CDC, several US and Latin American universities, and has major funding from the InterAmerican Development Bank. Through the OEPA initiative, GRBP partners with the national programs and MOHs of all six endemic countries of the Americas (Brazil, Colombia, Ecuador, Guatemala, Mexico and Venezuela).

Sustainability: In Africa, Mectizan® delivery must be sustained indefinitely since the APOC program does not aim to interrupt transmission of the *O. volvulus* parasite. Fundamental to the APOC strategy is establishing "sustainable" Mectizan® delivery systems that will continue after the withdrawal of outside funding, indefinitely. APOC advocates "Community Directed Treatment with Ivermectin" (CDTI) as the favored distribution method over "community-based" or "mobile distribution" (explanation of these different methods is beyond the scope of this report, and the interested reader is referred to the special volume on the Mectizan® program that

appeared as a supplement to the *Annals of Tropical Medicine and Parasitology*, April 1998: 92, Supplement 1). Monitoring progress toward sustainability will be an important element of APOC's program evaluation processes. Currently, GRBP monitors indicators of the ability of the program to continue after external funds are withdrawn (Annex 3), including community and government support for the program, and estimates of costs per treatment as (Figure 5). Indefinitely sustained treatment programs is not the goal of OEPA, since the strategy in the Americas (twice per year community-wide active mass therapy in all endemic villages) is designed to interrupt the transmission of the onchocerciasis. If OEPA is successful, at some point Mectizan® treatments can be halted (the reader is referred to Blanks et.al. The Onchocerciasis Elimination Program of the Americas: A history of partnership. *Pan American Journal of Public Health* 1998; 3:367-74).

GRBP PRIORITIES 1999

Reporting:

- Continue to emphasize monthly reporting of Mectizan® treatments.

Coverage:

- Seek to reach and maintain maximum health education and treatment coverage of the eligible at risk populations and high-risk villages in areas of GRBP-assisted activity.
- Measure treatments provided by GRBP-assisted programs against Annual Treatment Objectives (ATOs) set with the MOH and Mectizan® Donation Program (MDP)
- Determine Ultimate Treatment Goals (UTGs) that define "full treatment coverage" of GRBP-assisted areas.

Elimination:

- Move toward the goal of elimination of onchocerciasis in the Americas, using a strategy of semiannual treatment and maximum coverage.
- Help PAHO to establish a process by which to certify elimination.
- Document the impact of Mectizan® distribution on the transmission in Africa.

APOC:

- Work toward and evaluate the transition to the APOC strategy of "Community Directed Treatment with Ivermectin" (CDTI).
- Focus training in the GRBP-assisted states on reorienting health workers and villagers to the APOC CDTI strategy.
- Work with all partners to resolve the numerous administrative bottlenecks posed by the APOC funding process.

Mectizan® :

- Monitor the new distribution challenges presented by the reformulated 3- mg Mectizan® tablet, particularly issues arising from the reduced shelf life of the drug in opened bottles (eight weeks) and inventory control/security (Annex 4).
- Monitor tablets per person treated. This index should not exceed 2 tablets per person when 6-mg tablets are being distributed or 4 tablets per person when 3 mg tablets are distributed.

Program Reviews:

- Annual Program Reviews will continue to be an important part of the GRBP
- Program Reviews should eventually be held in the GRBP-assisted countries, as is currently the tradition with the Guinea worm (dracunculiasis) eradication program.

Other diseases:

- Build on GRBP successes by adapting Mectizan® distribution methods to lymphatic filariasis elimination and schistosomiasis and trachoma control.

Figure 1

Cumulative Mectizan® Treatments Delivered by Carter Center (GRBP)-Assisted Programs

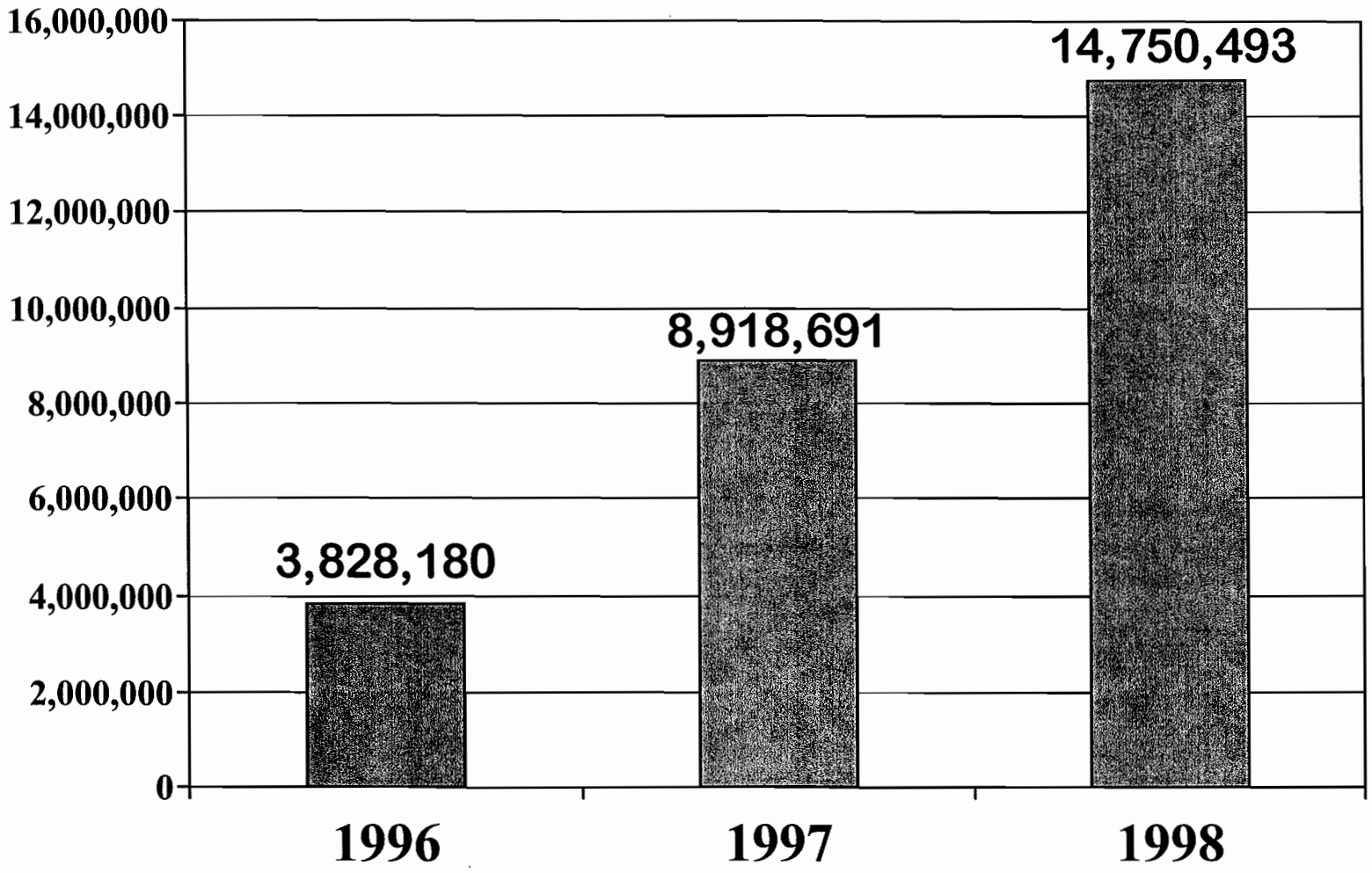


Figure 2

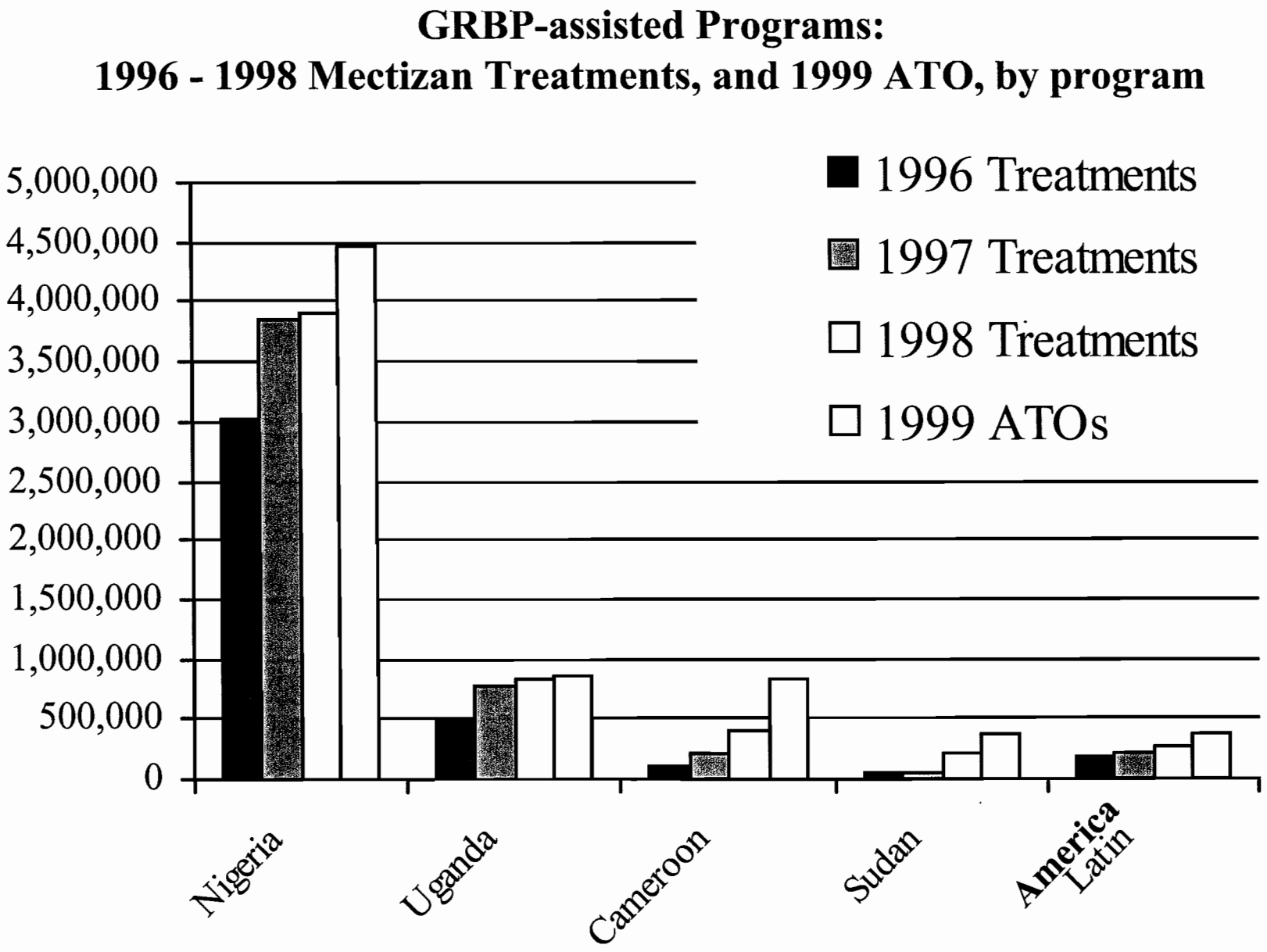

GRBP-assisted Programs:
1996 - 1998 Mectizan Treatments, and 1999 ATO, by program
5,000,000
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
1996 Treatments
1997 Treatments
1998 Treatments
1999 ATOs
Nigeria
Uganda
Cameroon
Sudan
Latin America

Figure 3

Cumulative Mectizan® Treatments, Carter Center (GRBP)-Assisted and Carter Center / Lions-Assisted Programs

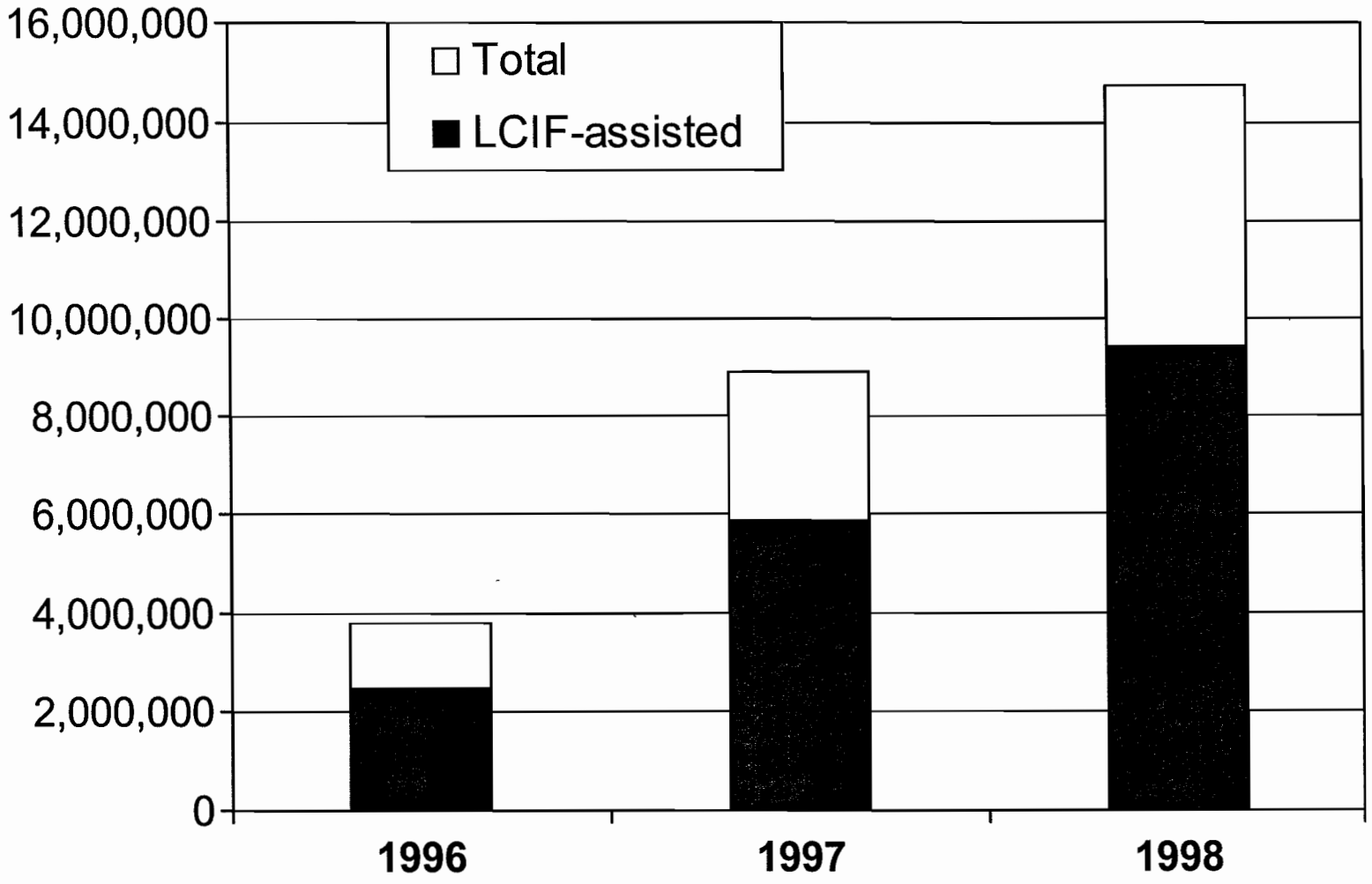


Figure 4

GRBP-assisted Programs: Mectizan Treatments 1996 - 1998, with the 1999 Annual Treatment Objective

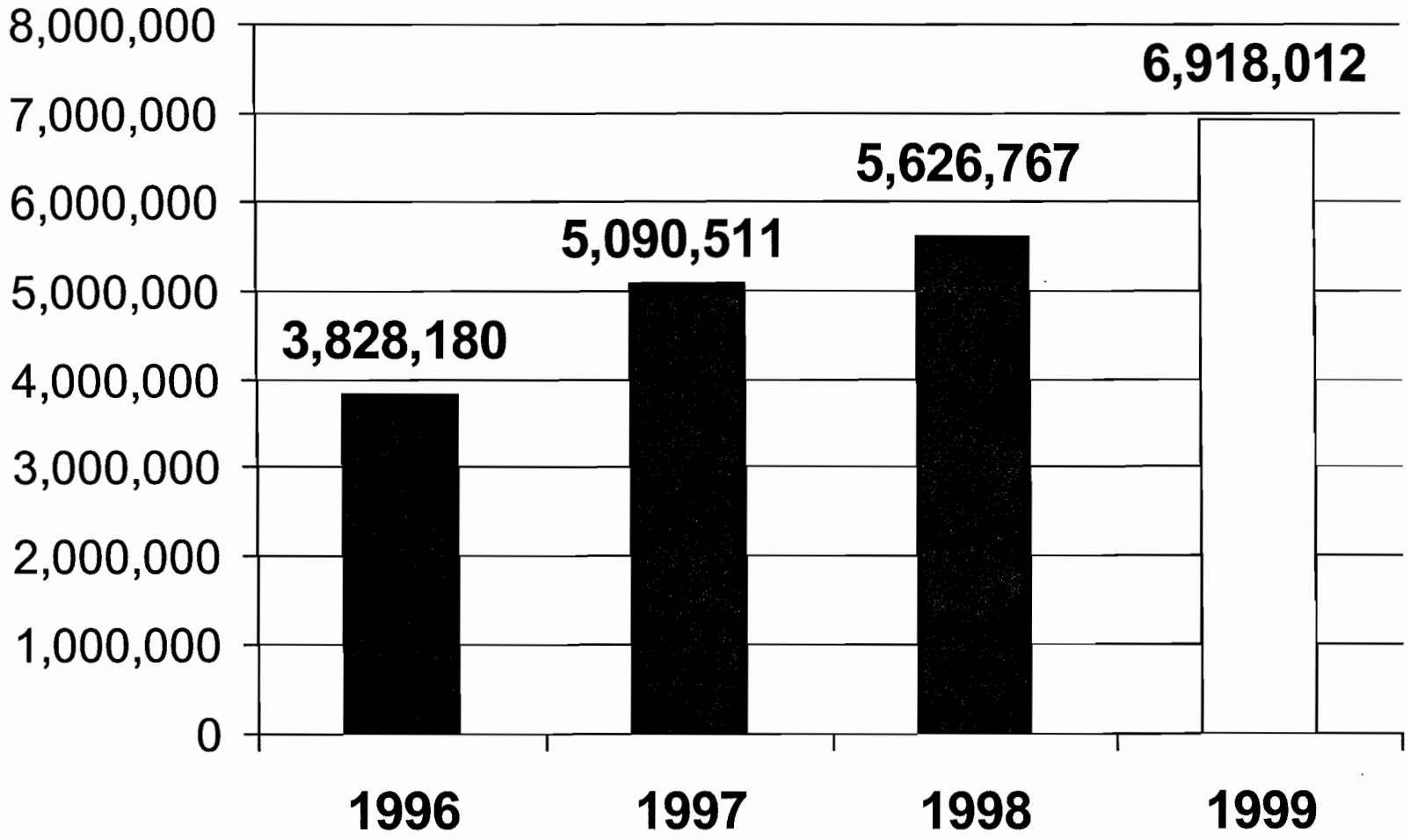


Figure 5

Cost per Treatment in GRBP-assisted African Programs, as reported at the 1998 Program Review

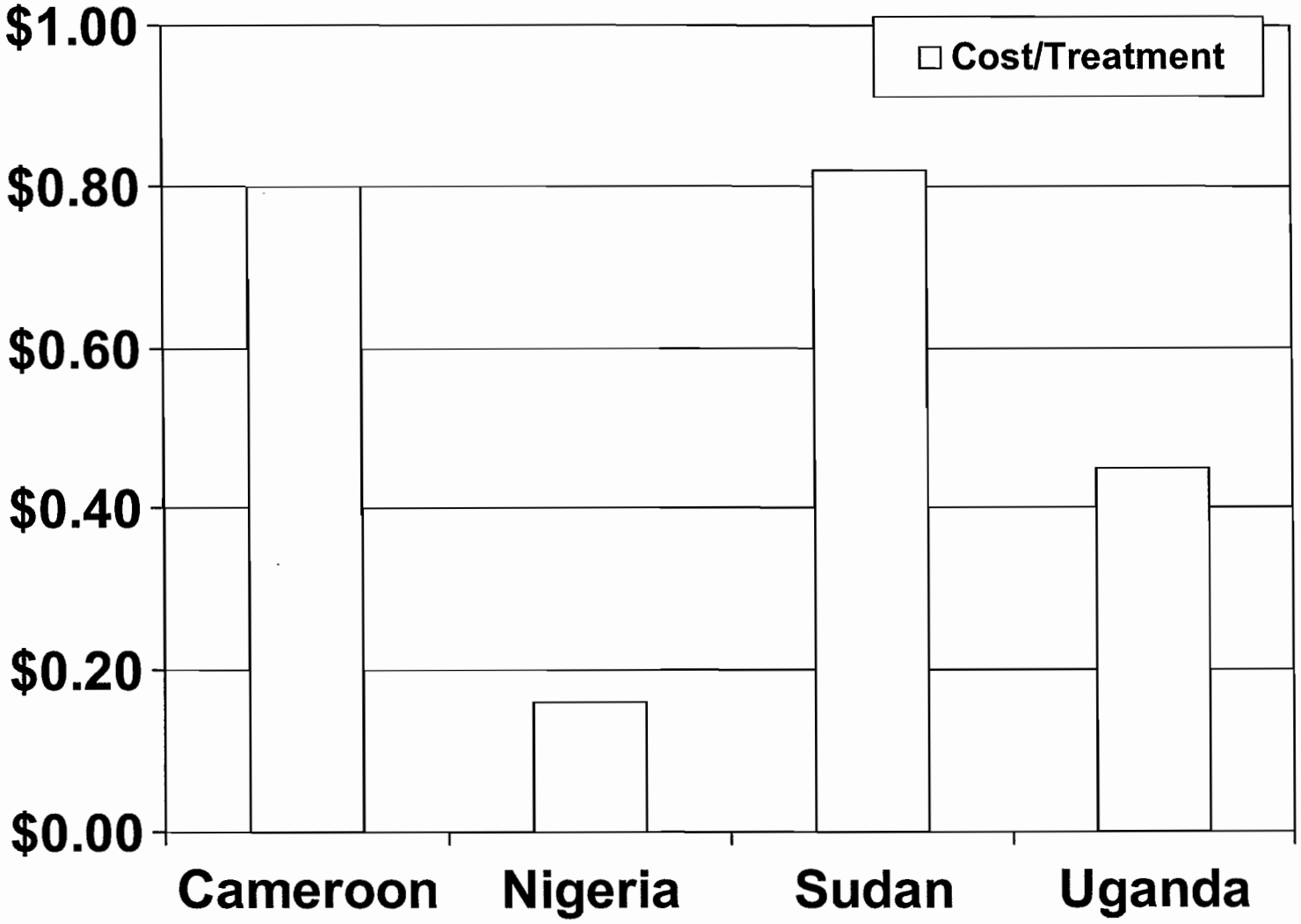
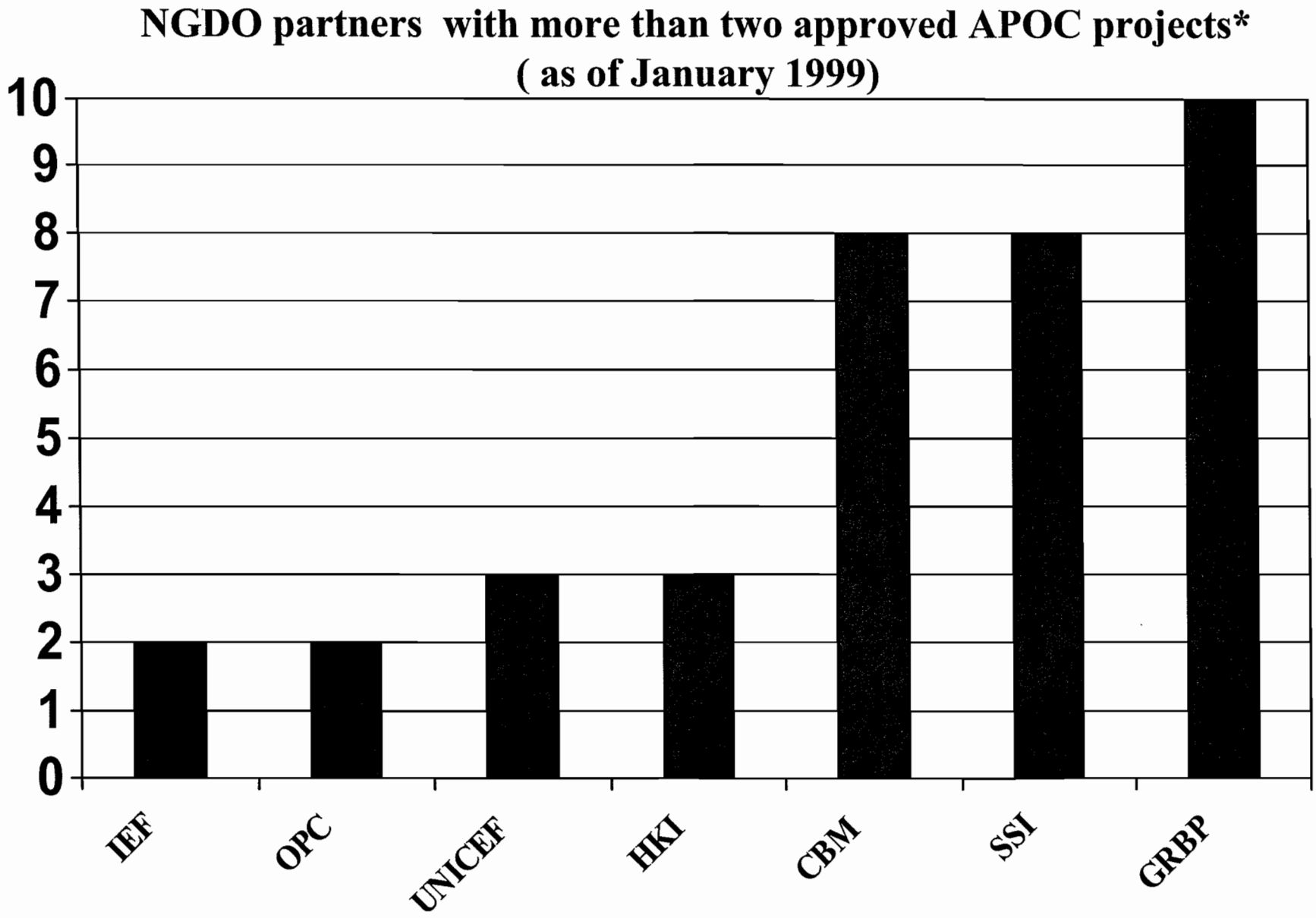


Figure 6



*source: Technical Consultative Committee (TCC) meetings

TABLE 1

Onchoceriasis: 1997 Mectizan treatment figures for Global 2000 River Blindness Program (GRBP)-assisted areas in Nigeria, Cameroon, Uganda, and collaborative programs in Latin America and Sudan

Country/Tx Category		*January*	*February*	*March*	*April*	*May*	*June*	*July*	*August*	*September*	*October*	*November*	*December*	*TOTAL*	*% of ATO*	*% of GRBP Treatments*
NIGERIA	ATO(earp)=	3,720,000		ATO(arv)=	8,207		ATO(hrv)=	7,062								
TX(earp)		20,292	168,887	656,088	249,748	269,646	877,124	319,960	311,095	527,359	187,284	137,266	127,783	3,852,532	104%	76%
TX(arv)		41	305	1,293	506	565	1,909	620	807	1,276	460	628	520	8,930	109%	68%
TX(hrv)		41	305	1,290	498	550	1,803	522	457	825	304	414	220	7,229	102%	68%
UGANDA	ATO(earp)=	808,514		ATO(arv)=	1,933		ATO(hrv)=	1,933								
TX(earp)		0	0	0	85,177	155,629	118,254	18,346	0	49,460	106,500	175,023	54,621	763,010	94%	15%
TX(arv)		0	0	0	354	327	100	46	0	26	122	479	479	1,933	100%	15%
TX(hrv)		0	0	0	354	327	100	46	0	26	122	479	479	1,933	100%	18%
CAMEROON	ATO(earp)=	585,085		ATO(arv)=	706		ATO(hrv)=	706								
TX(earp)		3,403	19,712	23,311	28,869	16,531	9,517	6,189	9,133	10,575	2,704	12,800	69,120	211,864	36%	4%
TX(arv)		17	43	120	172	147	77	52	47	256	34			965	137%	7%
TX(hrv)		15	43	120	172	147	77	52	47	256	256			1,185	168%	11%
OEPA*	ATO(earp)=	361,851		ATO(arv)=	1,928		ATO(hrv)=	251								
TX(earp)				71,851			80,635			22,284			41,196	215,966	60%	4%
TX(arv)													1,388	1,388	72%	11%
TX(hrv)													240	240	96%	2%
SUDAN																
TX(earp)									4343	8322	9952	18413	6109	47,139		1%
TX(arv)																
TX(hrv)																
Cumulative totals	ATO(earp)=	5,475,450		ATO(arv)=	12,774		ATO(hrv)=	9,952								
TX(earp)		23,695	188,599	751,250	363,794	441,806	1,085,530	344,495	324,571	618,000	306,440	343,502	298,829	**5,090,511**	**93%**	**100%**
TX(arv)		58	348	1,413	1,032	1,039	2,086	718	854	1,558	616	1,107	2,387	**13,216**	**103%**	**100%**
TX(hrv)		56	348	1,410	1,024	1,024	1,980	620	504	1,107	682	893	939	**10,587**	**106%**	**100%**

ATO: Annual Treatment Objective TX: Number Treated earp: Eligible At Risk Population arv: At Risk Villages hrv: High Risk Villages (nodule prevalence >19% or mf prevalence>39%)

*OEPA figures reported quarterly: hrv villages reflect prevalence at time of initiation of Mectizan therapy; OEPA uses >59% mf prevalence as hrv definition

Sudan figures only include GRBP-assisted treatments. A provisional total of 93,138 persons were treated in Sudan in 1997

Uganda and Cameroon hrv nu

Sudan ATO values not established.

TABLE 2

Onchoceriasis: 1998 Mectizan treatment figures for Global 2000 River Blindness Program (GRBP)-assisted areas in Nigeria, Cameroon, Uganda, and collaborative programs in Latin America and Sudan

Country/Tx Category		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL	% ATO	% ALL GRBP TX
NIGERIA	***ATO(earp)=**	**4030000**		**ATO(arv)=**	**10524**		**ATO(hrv)=**	**6979**								
TX(earp)		11962	314252	606072	438164	681079	1217547	332801	179640	55482	35802	38696	979	3912476	97%	69%
TX(arv)		30	839	985	920	1730	2459	962	614	306	69	553	4	9471	90%	66%
TX(hrv)		30	726	892	877	1551	1957	501	279	94	62	119	4	7092	102%	69%
UGANDA	***ATO(earp)=**	**845000**		**ATO(arv)=**	**1804**		**ATO(hrv)*=**	**1804**								
TX(earp)				9190	219523	145323	30741	19500	157,209	144702	76841	15725	8923	827677	98%	15%
TX(arv)				294	293	294	158	158	158	450				1805	100%	13%
TX(hrv)				294	293	294	158	158	158	450				1805	100%	17%
CAMEROON	**ATO(earp)=**	**599395**		**ATO(arv)=**	**2053**		**ATO(hrv)=**	**1613**								
TX(earp)		35788	21063	27591	40346	38026	48,584	24710	22561	25245	2467	45929	74971	407281	68%	7%
TX(arv)		125	86	156	172	150	163	102	40	65	10	22	213	1304	64%	9%
TX(hrv)		91	72	154	170	159	130	102	39	40	7	19	168	1151	71%	11%
OEPA*	**ATO(earp)=**	**358875**		**ATO(arv)=**	**1799**		**ATO(hrv)=**	**252**								
TX(earp)				109418			78550					42110	40544	270622	75%	5%
TX(arv)				903			187					212	387	1689	94%	12%
TX(hrv)				118			70					11	75	274	109%	3%
SUDAN	**ATO(earp)=**			**ATO(arv)=**			**ATO(hrv)=**									
TX(earp)		3686	2266	1500			104932		9945	30224	19437	16390	3105	208711		4%
TX(arv)																
TX(hrv)																
Cumulative totals	**ATO(earp)=**	**5833270**		**ATO(arv)=**	**16180**		**ATO(hrv)=**	**10648**								
TX(earp)		**51436**	**337581**	**753771**	**698033**	**864428**	**1480354**	**377011**	**369355**	**255653**	**134547**	**158850**	**128522**	**5626767**	**96%**	**100%**
TX(arv)		**155**	**925**	**2338**	**1385**	**2174**	**2967**	**1222**	**812**	**821**	**79**	**787**	**604**	**14269**	**88%**	**100%**
TX(hrv)		**121**	**798**	**1458**	**1340**	**2004**	**2315**	**761**	**476**	**584**	**69**	**149**	**247**	**10322**	**97%**	**100%**

ATO: Annual Treatment Objective TX: Number Treated earp: Eligible At Risk Population arv: At Risk Villages hrv: High Risk Villages (nodule prevalence >19% or mf prevalence>39%)

*OEPA figures reported quarterly: hrv villages reflect prevalence at time of initiation of Mectizan therapy; OEPA uses >59% mf prevalence as hrv definition

Sudan figures only include GRBP-assisted treatments. A total persons treated in Sudan in 1998=280,199

TABLE 3

ANNUAL TREATMENT OBJECTIVES (ATO) FOR GRBP - ASSISTED PROGRAMS, 1996-99

	1996	1997	% change	1998	% change	1999	% change
Nigeria							
ATO(earp)	2947000	3720000	26%	4030000	8%	4475000	11%
ATO(arv)	7014	8207	17%	10524	28%	10852	3%
ATO(hrv)	5756	7062	23%	6979	-1%	7859	13%
Uganda							
ATO(earp)	648514	900414	39%	845000	-6%	868466	3%
ATO(arv)	1418	1933	36%	1804	-7%	1789	-1%
ATO(hrv)	1418	1933	36%	1804	-7%	1789	-1%
Cameroon							
ATO(earp)	207021	585085	183%	599395	2%	817,134	36%
ATO(arv)	620	706	14%	2053	191%	2587	26%
ATO(hrv)	620	706	14%	1613	128%	2437	51%
OEPA							
ATO(earp)	328576	361851	10%	358875	-1%	381102	6%
ATO(arv)	1659	1928	16%	1799	-7%	1788	-1%
ATO(hrv)	353	251	-29%	251	0%	187	-25%
Sudan							
ATO(earp)						376310	
ATO(arv)							
ATO(hrv)							
TOTAL							
ATO(earp)	4131111	5475450	33%	5833270	7%	6918012	19%
ATO(arv)	10711	12774	19%	16180	27%	17016	5%
ATO(hrv)	8147	9952	22%	10647	7%	12272	15%

ATO: Annual Treatment Objective TX: Number Treated

earp: Eligible At Risk Population

arv: At Risk Villages hrv: High Risk Villages (nodule prevalence >19% or mf prevalence>39%)

OEPA uses >59% mf prevalence as hrv definition

NIGERIA

Nigeria is considered to be the most highly endemic country in the world for river blindness, having as much as 30-40% of the disease global burden. There are approximately 24 million Nigerians at risk of the disease. The National Onchocerciasis Control Program (NOCP) began in 1989 with Mectizan® treatments of about 49,566 persons, progressing to provide over 10 million treatments by 1998 (Figure7).

GRBP Nigeria activities consist of: 1) direct assistance to treatment activities in nine states (GRBP has offices in Jos, Lagos, Owerri, Benin City, and Enugu), 2) helping to implement nationwide onchocerciasis control through partnership with the Nigerian government and a coalition of NGDOs (HKI, Africare, CBM, MITOSATH, IEF, SightSavers, UNICEF and others) through the NOTF, 3) working to implement APOC-supported Community Directed Ivermectin Treatment (CDTI) programs and (4) collaborating with the CDC in maintaining a training center to support country-wide instruction in management issues related to program administration and Mectizan® distribution (Annex 5). A major GRBP-partner in seven states in southeastern Nigeria (in Abia, Imo, Edo, Delta, Anambra, Ebonyi, and Enugu States) is the LCIF SightFirst Program. The Lions Clubs District 404, with LCIF support, is actively involved in the mobilization, health education, and treatment activities in those seven states.

Treatment Activities: In 1998, GRBP Nigeria helped provide Mectizan® to 3,912,476 persons (Table 1), a 1% increase in treatments compared to 1997. GRBP-assisted treatments represented 39% of all treatments provided in Nigeria (Figure 7). Mass treatment activities took place in 7,092 hrv's with passive treatment in 2,379 (totaling treatment activities in 9,471 arv's) (Table 4). In 1999, GRBP plans to treat 4,475,000 persons with Mectizan®, an increase of 11% compared to 1998.

Training/Retraining: Training for over 9,000 health workers involved in Mectizan® distribution and health education activities was conducted in all nine states in 1998. Over 8,988 were community-based distributors (CBDs). In addition, advocacy visits were made to all 9 state MOH and Local Government Areas (LGAs) to solicit their support of the program. The numbers of persons to be trained in 1999 are projected to remain relatively the same compared to 1998 figures, as GRBP Nigeria has nearly achieved complete geographic coverage of its operational area.

Mectizan®: In 1998, GRBP received a total of 6,489,500 6-mg Mectizan® tablets. The (6- mg) tablet per person index was calculated to be 1.48 for Nigeria. There were no severe adverse reactions reported in GRBP-assisted programs in Nigeria, including in Edo and Delta States, where *Loa loa* occurs (Persons infected with *Loa loa* parasites in their blood are a special concern for potentially more serious adverse reactions when treated for the first time with Mectizan® - see Annex 6). Close monitoring for secondary reactions according to MDP recommendations will continue in these states, although most areas are now entering into second and third round therapy, when risk of reaction is less. Currently, all Mectizan® for mass treatment in Nigeria is imported by UNICEF and stored at the UNICEF warehouse prior to distribution to the various partners. The shipping schedule has improved significantly compared

to previous years and the entire 1999 consignment was received in December 1998.

APOC: All GRBP projects in Nigeria have been approved to receive APOC funding in 1999. With the exception of the Edo/Delta project, some funding from APOC had been received by December 1998. The administrative burden involved with APOC, however, has resulted in slow mobilization of these funds. For example, in the Nasarawa/Plateau project, the APOC proposal was approved for funding in September 1997, but the first installment was not released to Nigeria until July 1998.

Jos Training Center: The objective of the Sustainable Management Training Center (SMTC), supported by a grant (which was expended in 1998) provided by the Shell Foundation and carried out in collaboration with CDC and Emory University, is to develop better management skills for project planning and implementation (e.g., problem solving, financial management, the use of data in decision making, and logistics). In 1998, the SMTC held seven management training workshops and one reunion at the National office in Jos (four in 1997). A total of 119 managers were trained from 27 states and the Federal Capital Territory Abuja (78% of the trainees were from federal, state, and local government, see Annex 5).

Sustainability Indices:

Community support: Although in every hrv village where mass treatment was provided, the community members themselves reportedly selected their distributors; only a few communities participated in the actual design of the treatment program, as required by APOC. This new degree of participation is the major challenge to be met by GRBP in the APOC transition. One issue is the willingness of the community to provide incentives to the CBDs. The best GRBP experience with community payment of incentives has been in southeast Nigeria (Enugu, Ebonyi, Anambra States), where 2,547 (84%) of the 3,026 hrv representatives indicated their willingness to compensate CBDs with village funds (Figure 8). However, only 1,761 (69%) actually did.

Government support: All 1998 CBDs were supervised by MOH primary health care workers. In addition, all GRBP-assisted LGAs have a line item in their budgets for onchocerciasis control, but data are scarce as to how much of the budget is released. Again, the best GRBP experience with LGA support has come in Enugu, Ebonyi, Anambra States. Of the 51 LGAs there under active treatment, 45 (88%) signed acceptance forms indicating their willingness to provide financial support to ivermectin treatment activities. Of these, 33 (73%) have released at least some funds towards the support of ivermectin treatment activities (Figure 9). Other GRBP Nigeria-assisted areas have not done as well, and in Plateau and Nasarawa States, the amount released has been very disappointing.

Cost per treatment: The overall cost per treatment in GRBP-assisted states was calculated as US$ 0.16, which is below the APOC goal of $0.20 per treatment.

Lymphatic filariasis/schistosomiasis initiative in Plateau and Nasarawa States: With support from the pharmaceutical company SmithKline Beecham (SB), GRBP proposes to work with the Federal Ministry of Health of Nigeria (FMOH) and local and state government, to provide combination Mectizan® /albendazole treatment for Lymphatic Filariasis (LF) in Plateau and Nasarawa States. In addition, the drug praziquantel will be distributed in those villages that require treatment for urinary schistosomiasis. A discussion of the 1998 assessment activities for LF and schistosomiasis in preparation for the expanded treatment program in Plateau and Nasarawa is provided in Annex 7. Beginning in 1999, the program would be launched in two onchocerciasis-endemic LGAs, Pankshin in Plateau State and Akwanga in Nasarawa State.

Challenges to the Program:

1. Fuel scarcity in Nigeria was a major impediment to transport in 1998.

2. APOC funding delays posed difficult challenges considering the need for a careful approach to the transformation of a well-established distribution program to CDTI.

3. The transition of 6-mg to 3-mg Mectizan® tablets. The primary objective is to minimize wastage from rapid expiration of tablets after opening the seal of the bottles.

4. Decreased willingness in some areas to continue drug therapy. This is primarily due to the fact that after 6-7 years of treatment, people feel better, and have less itching. The question is being asked "Why do I still need to take the tablets?"

NIGERIA RECOMMENDATIONS 1999

APOC:

- Seek smooth transition to the APOC strategy of Community Directed Treatment with Ivermectin and to the APOC funding mechanism throughout the nine GRBP-assisted states. Particular emphasis must be given to Community-Directed Distributors (CDD) training and to resolving financial management issues in a way that is compatible with the annual operational schedule. An emphasis must be placed on APOC funds reaching the field in advance of mass treatment activities being undertaken.

Government support:

- Seek more financial and material support for the program from all levels of Nigerian government, which in many cases have contributed only minimally to the national campaign. Federal, state and local government could still do more.

Transmission impact:

- Continue to analyze data from the sentinel village evaluations in Plateau and Nasarawa States, supplemented by additional field observations, with focus on the impact of treatment on reducing the transmission of onchocerciasis.

Other diseases:

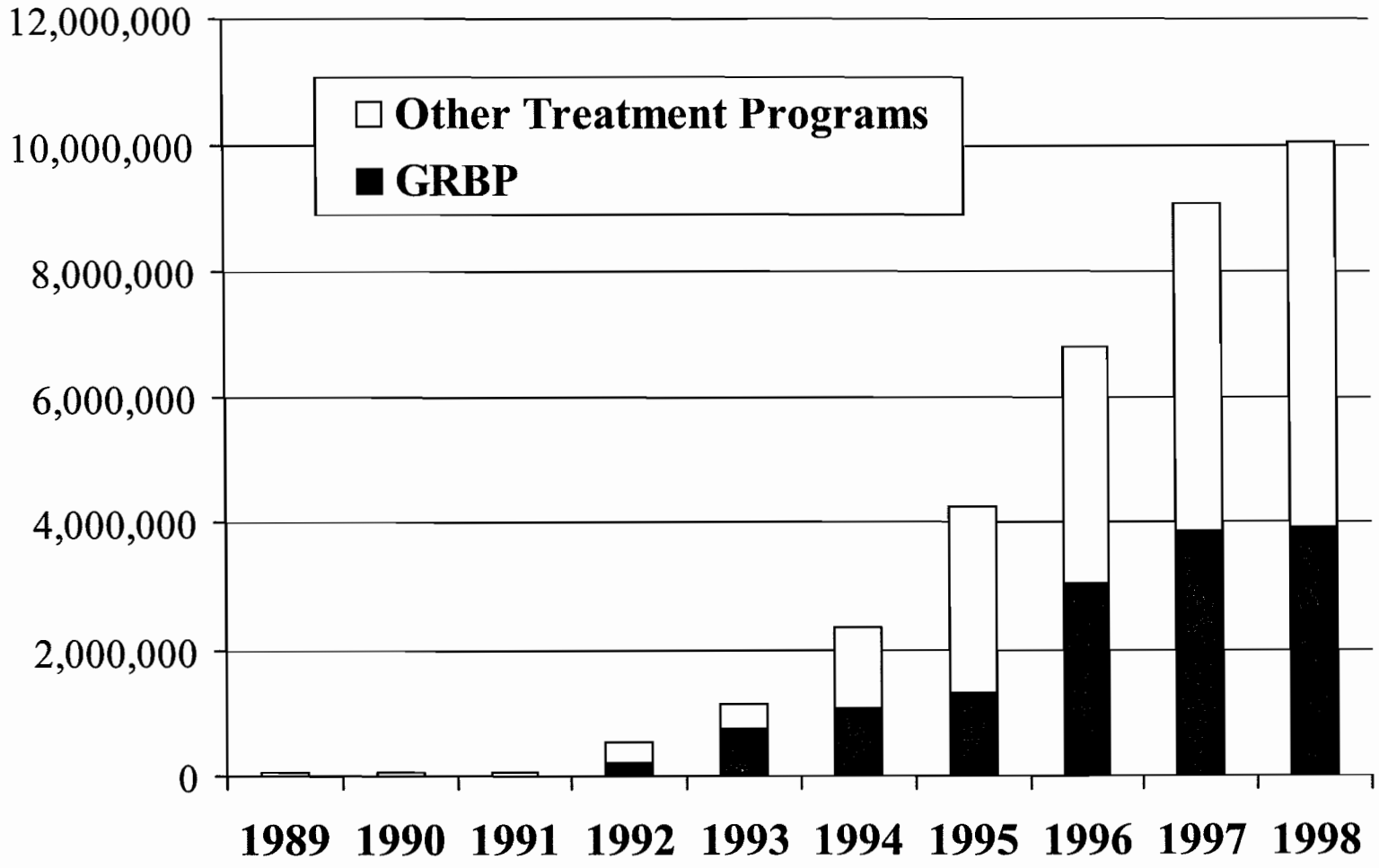
- Focus activities on building on the current successes of the Plateau/Nasarawa Onchocerciasis Program by adapting Mectizan® distribution methods to disease initiatives in lymphatic filariasis and schistosomiasis.

Map 1


Nigeria
GRBP-Assisted States
SOKOTO
ZAMFARA
KATSINA
JIGAWA
YOBE
BORNO
KANO
KEBBI
KADUNA
BAUCHI
GOMBE
NIGER
PLATEAU
ADAMAWA
FCT
KWARA
NASSARAWA
TARABA
OYO
EKITI
KOGI
OSUN
BENUE
ONDO
OGUN
ENUGU
LAGOS
EDO
EBONYI
ANAMBRA
CROSS RIVER
DELTA
IMO
ABIA
BAYELSA
RIVERS
AKWA IBOM
0 50 100
GRPB, LCIF, & APOC
GRBP & APOC
State boundries

Figure 7

Global 2000 River Blindness Program (GRBP) and total Mectizan treatments provided in Nigeria, 1989-98



Treatments from 1992-1995 by RBF
Source of 1998 treatment figures: Nigeria NGDO meeting, April 20, 1999

Figure 8

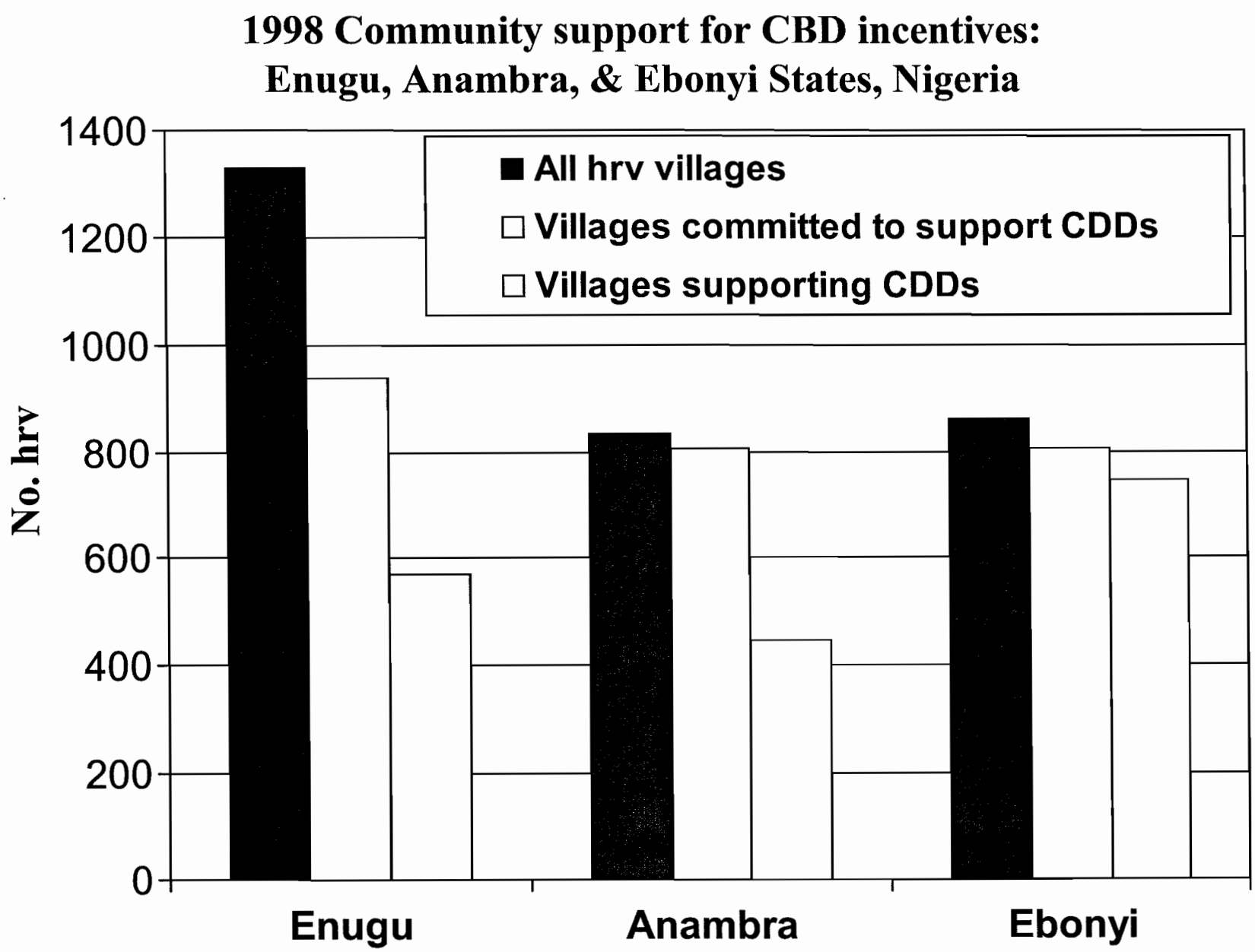

1998 Community support for CBD incentives:
Enugu, Anambra, & Ebonyi States, Nigeria
No. hrv
1400
1200
1000
800
600
400
200
0
All hrv villages
Villages committed to support CDDs
Villages supporting CDDs
Enugu
Anambra
Ebonyi

Figure 9

1998 LGA financial support for onchocerciasis control in Enugu, Anambra, & Ebonyi States, Nigeria

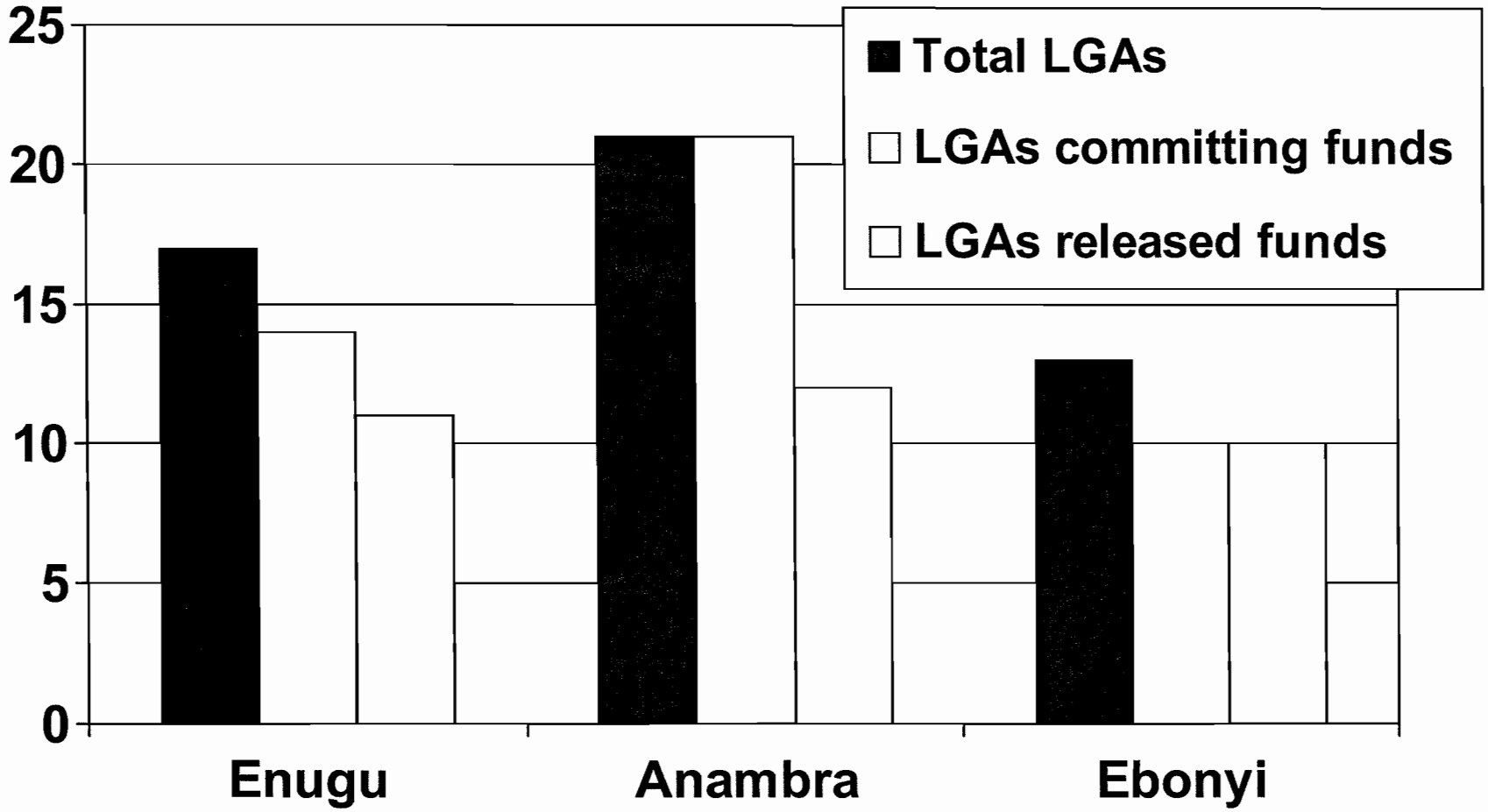


TABLE 4

GRBP-ASSISTED NIGERIA TREATMENTS, 1998 AND 1997, BY STATE

1998	ATO(earp)	TX 1998	% ATO	ATO(arv)	TX 1998	% ATO	ATO(hrv)	TX 1998	% ATO
Abia	285000	294516	**103%**	1259	1002	**80%**	532	686	129%
Anambra	500000	448807	**90%**	964	1050	**109%**	834	943	113%
Delta	400000	406848	**102%**	700	595	**85%**	450	506	112%
Ebonyi	370000	374104	**101%**	1155	938	**81%**	861	908	105%
Edo	500000	490239	**98%**	700	592	**85%**	500	408	82%
Enugu	650000	630445	**97%**	1680	1472	**88%**	1331	1353	102%
Imo	640000	610306	**95%**	2600	2485	**96%**	1458	1385	95%
Nasarawa	420000	396813	**94%**	857	741	**86%**	694	579	83%
Plateau	265000	260398	**98%**	609	596	**98%**	319	324	102%
Total	**4030000**	**3912476**	**97%**	**10524**	**9471**	**90%**	**6979**	**7092**	**102%**
1997	**ATO(earp)**	**TX 1997**	**% ATO**	**ATO(arv)**	**TX 1997**	**% ATO**	**ATO(hrv)**	**TX 1997**	**% ATO**
Abia	270000	319272	118%	934	922	99%	727	715	98%
Anambra	400000	426591	107%	964	964	100%	834	834	100%
Delta	460000	488064	106%	664	656	99%	659	851	129%
Ebonyi	300000	253819	85%	885	885	100%	873	873	
Edo	550000	518851	94%	671	671	100%	645	645	100%
Enugu	480000	540779	113%	1130	1072	95%	1084	1026	95%
Imo	610000	615902	101%	2228	1888	85%	1415	1273	90%
Nasarawa	402400	431551	107%	847	847	100%	690	690	
Plateau	247600	257703	104%	607	503	83%	319	302	95%
Total	**3720000**	**3852532**	**104%**	**8930**	**8408**	**94%**	**7246**	**7209**	**99%**

ATO: Annual Treatment Objective TX: Number Treated
earp: Eligible At Risk Population
arv: At Risk Villages hrv: High Risk Villages (nodule prevalence >19% or mf prevalence>39%)

UGANDA

Onchocerciasis affects about 1.8 million persons residing in 18 (out of 39) districts in Uganda. The River Blindness Foundation (RBF) first began treatment activities in Uganda in 1993, with GRBP assuming that role in 1996. Currently, GRBP-assisted programs are active in all four foci (e.g., Southwest, West Nile, Middle North, and Mount Elgon) of onchocerciasis in the country and in 10 of the 18 endemic districts: Kisoro, Kabale, Rukungiri, and Kasese (in the Southwest focus bordering the former Zaire); Nebbi, Moyo and Adjumani (the West Nile focus bordering Sudan and the former Zaire), Gulu, Kitgum[1], and Apac (the Middle North focus); and Mbale (the Mount Elgon focus in the east, bordering Kenya). Other NGDO partners in Uganda include SSI (in Masindi, Hoima, and Kibale districts), CBM (in Bushenyi and Mbarara districts), the Church of Uganda (in Arua District), and the German bilateral agency Gemeinschaft fur Technische Zusammenarbeit (GTZ) (in Kabarole District).

Treatments: The program helped to treat 827,677 persons, 98% of its 1998 ATO (Table 5), and 78% of all Ugandan treatments provided by both indigenous and international NGDOs (1,067,951). ATO levels in Kasese (81%) and Kisoro (83%) were lower than the GRBP Uganda average due to insecurity in those areas. Mass treatment activities took place in 1,805 hrv's. In 1999, GRBP plans to assist in treating 868,466 persons in Uganda with Mectizan® (an increase of 3% compared to the 1998 ATO-Table 3) in 1,789 communities.

Training/Retraining: A total of 2,505 CDDs were trained in 1998. Overall, there is an average of 1 CDD for every 20 households.

Mectizan®: A loss of 70,000 tablets of ivermectin in the Moyo district attracted considerable national and international attention to the program. The investigation showed that the theft occurred after the tablets were transferred from direct control of GRBP Uganda to the district Ministry of Health. The tablets were diverted by a high level official to be sold in the Democratic Republic of Congo (DRC). It is hoped that given resultant personnel changes by the MOH, such losses will not recur. Mr. Katabarwa, the GRBP country representative, was confident that the necessary controls were in place to ensure that future shipments of Mectizan® will be secure. The overall average (3- mg) tablet per person for GRBP Uganda in 1998 was 2.8.

APOC: All GRBP-assisted projects in Uganda except Kitgum (where security remains a major problem) have been approved to receive APOC funding.

> ***Delayed Funding:*** Only about 11% of the total amount budgeted under APOC reached the district level for 1998, and 88% of those APOC funds that were received came after mass treatment had been completed. With the new CDTI strategy, where communities decide on the treatment schedules, such delays require GRBP Uganda to advance the project monies budgeted for other items to meet community demands. Therefore, there

[1] Mectizan® treatment activities in Kitgum district are restricted due to insecurity

were funding constraints at the GRBP headquarter's level. Despite forward funding, APOC funding delays still interfered with the original ivermectin treatment schedule.

Communications: All levels of the partnership would benefit from improved communication. This includes communication outside of the country to APOC Headquarters in Ouagadougou, and within country within the NOTF, particularly with regards to Bank Signatories, where communications and coordination difficulties resulted in further delays of disbursement of funds to the districts.

Budget reductions: The budgets proposed to APOC for support were considerably reduced by APOC management. As a result, NGDOs and government have had to fund more than the originally anticipated 25% of project costs.

Sustainability indices:

Community support: The issue of whether incentives for CDDs should be provided, and if so by whom (NGDO, government or community), remains a big issue in Uganda. It is general knowledge that incentives are provided to other health/community workers by other MOH projects. This raises questions among CDDs as to why APOC does not do the same. On the other hand, a study by the GRBP Uganda team showed that monetary incentives have been negatively related to high community coverage.

Government support: The need for districts to begin to disburse funds for onchocerciasis control activities is considered critical to achieving sustainability. Currently all funding requirements are met by external agencies, yet APOC stipulates that external funding must decrease over time. To obtain greater government support, advocacy visits were carried out to the districts to obtain from top-level officials their pledges of support for the program. Visits to the sub-county level to meet local supervisors and community leaders were needed to convince district health staff that communities are capable of taking responsibility for the program.

Cost per treatment: Overall, cost per person during 1998 was US$ 0.45.

Constraints: Instability continues in 50 percent of the areas with support from GRBP. Most unstable are the districts of Adjumani, Apac, Kasese, Gulu, Moyo, Kitgum, and staff are concerned for their safety while on the road to Nebbi district. The issue of refugees and visitors requesting treatment during community distribution remains an issue for GRBP Uganda. Refugees and visitors inflate coverage percent (since the denominator is usually not adjusted) and make planning for Mectizan® orders difficult. At a district or national level, visitors arriving for treatment from other districts or countries (Democratic Republic of Congo and Sudan in particular) can give an incorrect picture of what is actually happening in the field. This is most obvious when comparing community level treatment surveys (as part of the APOC monitoring exercise) with the program village statistics. Unfortunately, village level information systems are not designed for monitoring refugee/visitor treatment activities (and collecting data on their origin).

UGANDA RECOMMENDATIONS 1999:

APOC:

- Work to eliminate the financial and administrative bottlenecks being experienced in APOC-supported districts. Emphasis must be placed on APOC funds reaching the field in advance of mass treatment activities being undertaken.
- The WHO Country Representative in Uganda should be encouraged to understand the programmatic impact of delay of release of APOC funds.
- Monitor the APOC assessment and reporting systems, particularly as relates to traditional GRBP reporting systems.

Treatment Figures:

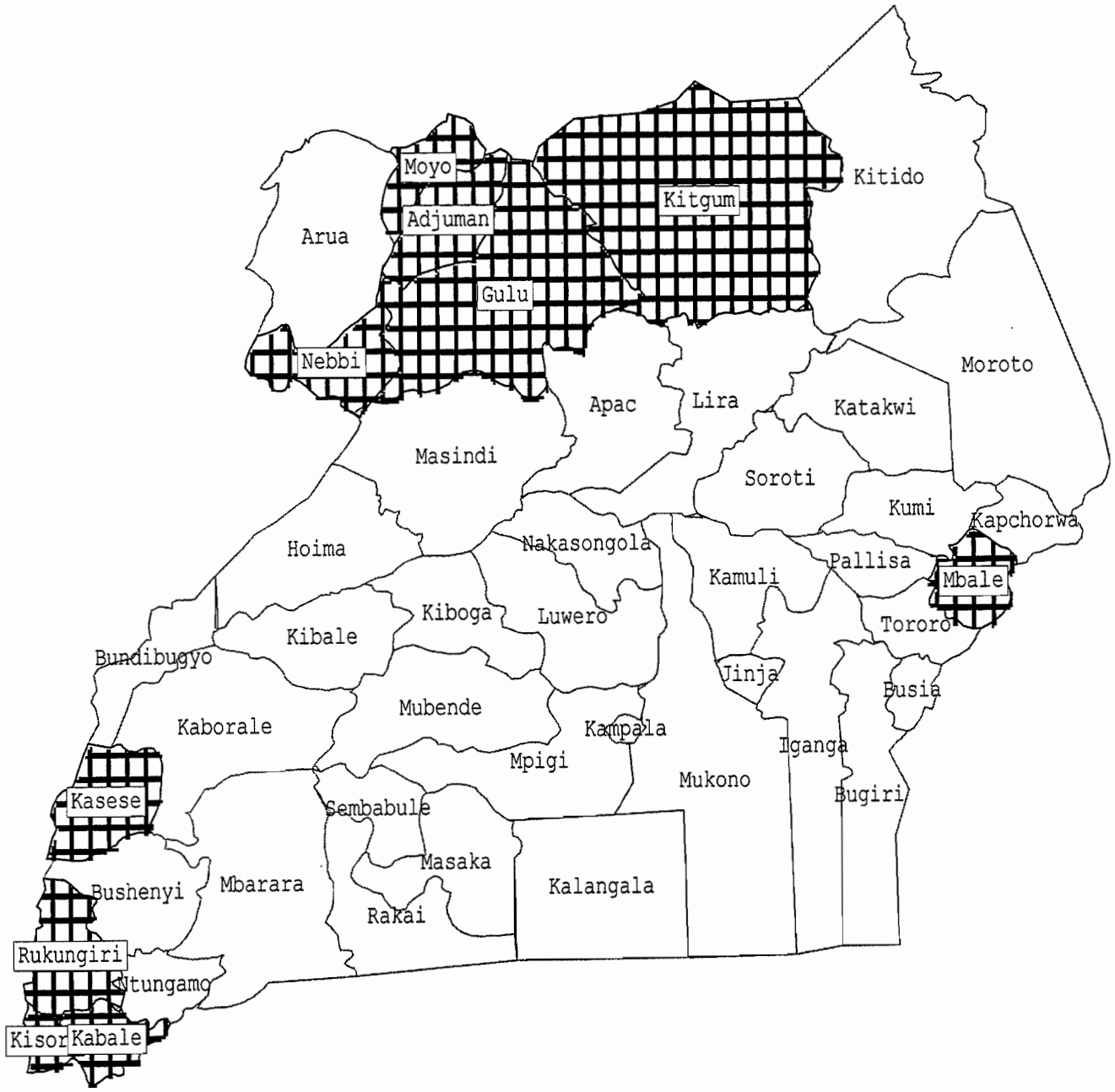
- Continue to work on better information systems to monitor treatment of visitors in GRBP-assisted areas. This is an area of potential operations research support from APOC.

Sustainability:

- Focus on new solutions to the sustainability issues identified, such as incentives for CDDs, CDD attrition, and impact of advocacy at the district level.

Map 2

Uganda
GRBP - Assisted Districts

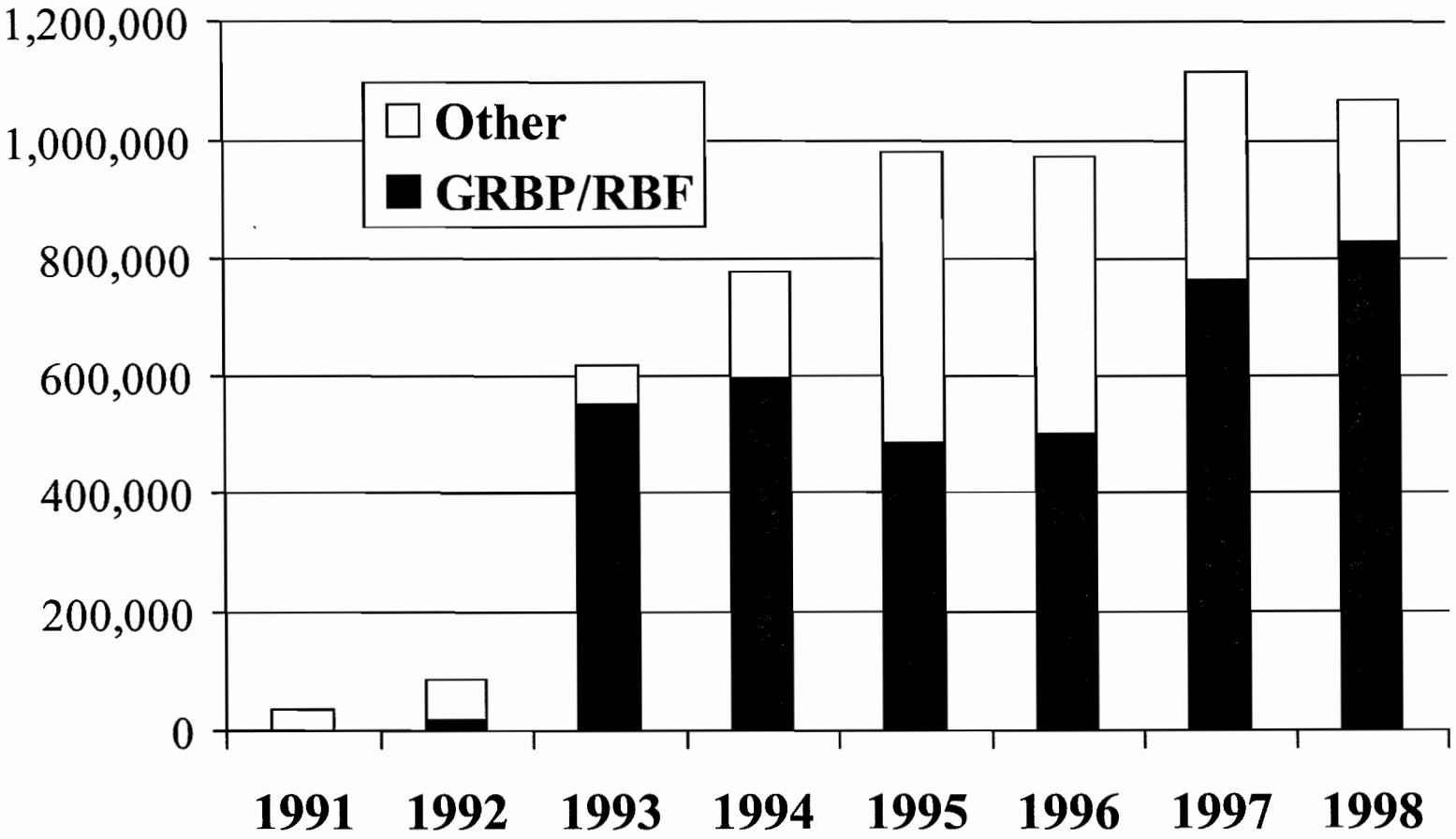


District Boundries

GRBP - assisted districts

Figure 10

Uganda: GRBP-assisted Mectizan® Treatments as Part of the Total Treatments Provided, 1991-1998



Treatments in 1992-1995 by RBF

TABLE 5

GRBP-ASSISTED UGANDA TREATMENTS, 1998 AND 1997, BY DISTRICT

1998

UGANDA	ATO(earp)	TX 1998	% ATO	ATO(hrv)	TX 1998	% ATO
Adjumani	126400	114772	91%	108	108	100%
Apac	5910	5910	100%	9	9	100%
Gulu	129380	132792	103%	268	268	100%
Kabale	12759	12333	97%	26	27	104%
Kasese	70660	63563	90%	125	125	100%
Kisoro	15094	13653	90%	31	31	100%
Moyo	120792	107604	89%	151	151	100%
Mbale	166237	167232	101%	386	386	100%
Nebbi	170000	181724	107%	678	678	100%
Rukungiri	27768	28094	101%	22	22	100%
Total	**845000**	**827677**	**98%**	**1804**	**1805**	**100%**

1997

UGANDA	ATO(earp)	TX 1997	% ATO	ATO(hrv)	TX 1997	% ATO
Moyo	249544	193349	77%	258	257	100%
Kabale	11618	12822	110%	27	27	100%
Rukungiri	26500	26273	99%	22	22	100%
Kasese	49780	54304	109%	125	123	98%
Kisoro	11450	13637	119%	31	31	100%
Apac	4622	5552	120%	9	9	100%
Nebbi	160000	165619	104%	678	678	100%
Gulu	135000	143600	106%	268	207	77%
Mbale	160000	147854	92%	515	431	84%
Total	**808514**	**763010**	**94%**	**1933**	**1785**	**92%**

ATO: Annual Treatment Objective TX: Number Treated
earp: Eligible At Risk Population
hrv: High Risk Villages (nodule prevalence >19% or mf prevalence>39%)

CAMEROON

Onchocerciasis is widespread in Cameroon, with some 5.1 million infected, and about 62% of its population of 15 million at risk of infection. About 60,000 people are estimated to suffer some degree of visual impairment, and perhaps 1 million persons have onchocercal skin disease. Mectizan® treatment has been accepted as the principal strategy in the NOTF control policy. However, in the recent past, the Cameroon MOH strategy for Mectizan® distribution differed in at least two important ways from the APOC CDTI strategy: 1) the health center personnel distributed the drug through an outreach program (rather than using villagers as community directed distributors), and 2) 100 CFA (about US $ 0.20) was charged for each Mectizan® treatment to cover distribution costs. The money was used to pay for supervision (per diem), the maintenance and fueling of motorcycles, and other costs, some unrelated to Mectizan® distribution.

RBF began assisting the MOH in North Province (the most highly endemic for blinding onchocerciasis in the country) in 1992 and also pioneered the development of a nationwide epidemiological survey (the methodology of which became known as Rapid Epidemiological Mapping of Onchocerciasis-REMO). Several other NGDOs have provided assistance to the MOH in Mectizan® distribution activities in Cameroon, including the IEF, HKI, and the German bilateral agency Gemeinschaft fur Technische Zusammenarbeit (GTZ). In August, 1995, the Lions launched a new project, supervised by Lions District 403B, in partnership with the MOH and four NGDOs (RBF, HKI, IEF, and SSI), with the purpose of setting up Mectizan® distribution programs in 3 provinces (Centre, Adamaua, and West) over a 5-year period. This project has had a major impact on the number of treatments provided in Cameroon, increasing annual treatments by more than 200% since 1996.

In 1997, the MOH developed a comprehensive plan for a nationwide control effort aimed at obtaining APOC support to eliminate onchocerciasis as a disease of public health and socio-economic importance by the year 2015. In December 1997, at the meeting of APOC partners in Ghana, the Cameroon delegation declared a change in policy to embrace the APOC CDTI strategy. In 1998, as the first funding for Cameroon APOC projects was obtained, a transition began from the outreach strategy to one of community-based (community-directed) treatment.

Although it has been postulated that the cost recovery system was contributing to low rates of treatment coverage in Cameroon, there has been no change in the MOH mandate for cost recovery in the Mectizan® program, although it was decided that children under the age of 15 would pay only 10 CFA. Otherwise, each person treated is asked by WHO to pay 100 CFA at the time the drug is administered. The planned distribution of funds recovered from the cost recovery system is as follows:

5%	Drug procurement for treating minor side effects
25%	Oncho fund to be saved for post APOC support
25%	Incentives for community distributors
15%	Distribution activities (including adverse reaction drugs)
15%	Operation expenses at the MOH

15% Supervision

Treatment Activities: The total number of GRBP-assisted treatments in Cameroon for 1998 was 407,281, which comprised 68% of the GRBP annual treatment objective (Table 6). The proportion of Cameroon treatments assisted by GRBP is shown in Figure 11. Since reporting of treatments to the MOH is incomplete, the total number of treatments for all Cameroon in 1998 provided here is inaccurate, and likely highly under representative of the total actually provided. GRBP-assisted treatments in 1998 represented a 92% increase over treatments assisted by the program in 1997; the increase in treatments was due to activities in West Province (Figure 12).

The tripartite coalition of GRBP, LCIF, and the MOH launched Mectizan® distribution in West Province in September 1996, providing a total of 59,083 treatments that year in eight of the fifteen health districts (Figure 12). Expansion through the three phases of the action plan was completed in September 1998, and now all targeted health districts are under Mectizan® treatment. The 1999 ATO for West Province is 640,420 (a 36% increase compared to 1998). In contrast, the original RBF project in the North Province functions has expanded fully and expects little change in its 1999 ATO (129,356). North Province will have APOC support in 1999.

Training: In the West Province, the major efforts in training took place in the districts of the third phase of expansion in West Province. A total of 398 persons were trained in all categories, with community distributors trained in all the targeted hrv (quartiers). In addition, public health personnel were trained in Rapid Epidemiological Assessment (REA) nodule survey methods in order to refine the endemicity data for the expansion areas. Since until very recently the MOH did not allow utilization of community distributors except in very poorly accessible communities, only 33 CDDs were in North Province. In 1999, training of CDDs will be a major activity associated with APOC support.

Assessments: Rapid assessment for onchocerciasis in West Province in 1995 estimated that about 70% of the rural population is at risk for onchocerciasis. During 1998, more villages in West Province were inventoried and mapped with the help of Ms. Karina Schmidt, MPH, Emory University Rollins School of Public Health student. REA was performed in all the Phase III districts. The Mifi and Santchou Districts were confirmed as containing meso/hyper endemic villages needing mass therapy, while Dschang District was hypoendemic and so qualified for passive, clinic based Mectizan® treatment (the only district in West Province found to be hypoendemic). GRBP has planned no additional assessments in expansion areas, but more accurate population data would be useful in planning of treatments.

Mectizan® : A total of 120,112 6-mg tablets were distributed in the North Province and 471,904 in the West. In September 1998, 26,472.5, and 6,624.5 tablets expired in the West and North provinces respectively. As of January 1999, the West province had 305,000 Mectizan® tablets on hand. The 6-mg tablet per person ratio in Cameroon was 1.17 for the North and 1.55 for the West.

The disbursement of Mectizan® in Cameroon occurs as follows: 1) Each health area puts in an order for Mectizan® to the District office based on the estimates of the eligible at risk

population. 2) The approved request is sent through the Provincial delegate to the GRBP office for inclusion in the (North or West Province) MDP application. 3) Once approved in Atlanta, the drug is shipped to the WHO representative in Yaounde. 4) GRBP personnel retrieve the medicine and send it to the West and North provincial drug distribution center (Centre d'Approvisionement Pharmaceutique Provincial -CAPP). 5) Each health district has a pharmacy attached to it, which is supplied (every two months) by the CAPP. 6) The Mectizan® is sent there via the regular delivery method, and the health area nurses then pick up their Mectizan® order.

Given the existence of *Loa loa* in West Province, close monitoring for severe adverse effects (SAEs) is maintained. Survey data show that the parasite occurs in low intensity infections (blood parasitemia <10,000), so compared to other areas in Cameroon, the risk for severe adverse reactions associated with the Central Nervous System (CNS) in the west is considered low. Nevertheless, surveillance structures conducive to monitoring are functional, with the provincial health delegate and the provincial chief of community health fully briefed about *Loa loa*-related reactions, and the treatment program integrated with the primary health care system.

The surveillance system identified one death in West Province in late 1998 temporally associated with Mectizan® treatment. The patient had a *Loa loa* infection, but a low parasitemia and a period of lucency during hospitalization were against this being a case of *Loa loa* encephalopathy. After an investigation, it was concluded that the cause of death was uncertain, and the differential diagnosis included cerebral malaria, severe hypoglycemia, and/or meningitis. A description of the case and its management are given in Annex 6.

APOC: As mentioned above until late 1998, the MOH did not allow community-based distributors to administer Mectizan® except in the absence of PHC infrastructure. With the endorsement by the MOH of CDTI and financial support from APOC, the intensive training required for the 1999 CDTI transition is in planning stages for North Province.

Sustainability Indices:

Community involvement: Community involvement in the design and implementation of the Mectizan® distribution is now much more important given the MOH reorientation towards APOC CDTI. However, in all areas the communities targeted for mass treatment have functioning village health committees that have been informed through IEC activities about the purpose of the project. Community-based workers have been involved with the outreach nurses in delivering treatment and therefore will be important resources during the transition to CDTI.

Government involvement: The integration of the program within the National Primary Health Care system has been relatively successful, but little money has been released by the government in support of the program.

Cost per treatment: Cost per treatment in 1997 averaged US $0.80, which includes the cost recovery fee that must be paid for the service by participants.

Challenges & Constraints:

1. Lack of good population data for villages classified as endemic and in need of mass treatment

2. Unbudgeted activities for the training of community distributors in West Province

3. Increased demand for incentives by community members, health personnel, and local authorities

4. Lack of reliable transportation

5. Transition from the 6-mg to 3-mg tablet

6. An ambitious ATO for West Province

CAMEROON RECOMMENDATIONS 1999

APOC:

- An emphasis must be placed on APOC funds reaching the field in advance of mass treatment activities being undertaken.
- Work closely with the MOH and APOC to implement the new APOC project in North Province, adapting an intensive training agenda to allow the strategy of community-directed distribution to be accepted in a mature program that has used an outreach treatment policy for many years.

West Province:

- Work to expand treatment activities to the West Province's ultimate treatment goal.
- Refine population data to better calculate Mectizan® needs for West Province.
- Transition of the West Province to CDTI is now being urged by the Cameroonian MOH. As with North Province, transition to CDTI will require an intensive training agenda at a time when Lions resources are nearly depleted. The program should explore options to apply to APOC for support of West Province when the LCIF project terminates in the year 2000.

Cost recovery:

- Informally monitor money management activities related to the funds collected (there is no accountability to participating NGDOs).
- Develop a protocol for evaluating the impact of cost recovery on coverage in the North Province, and apply to APOC for support.

Loa loa SAE monitoring:

- Continue to maintain surveillance systems for severe adverse effects in West Province.

Mectizan:

- Monitor the security of Mectizan® and the delivery/release of tablets from CAPP in the projects, as well as the transition to 3-mg tablets.

Map 3

Cameroon
GRBP-Assisted Provinces

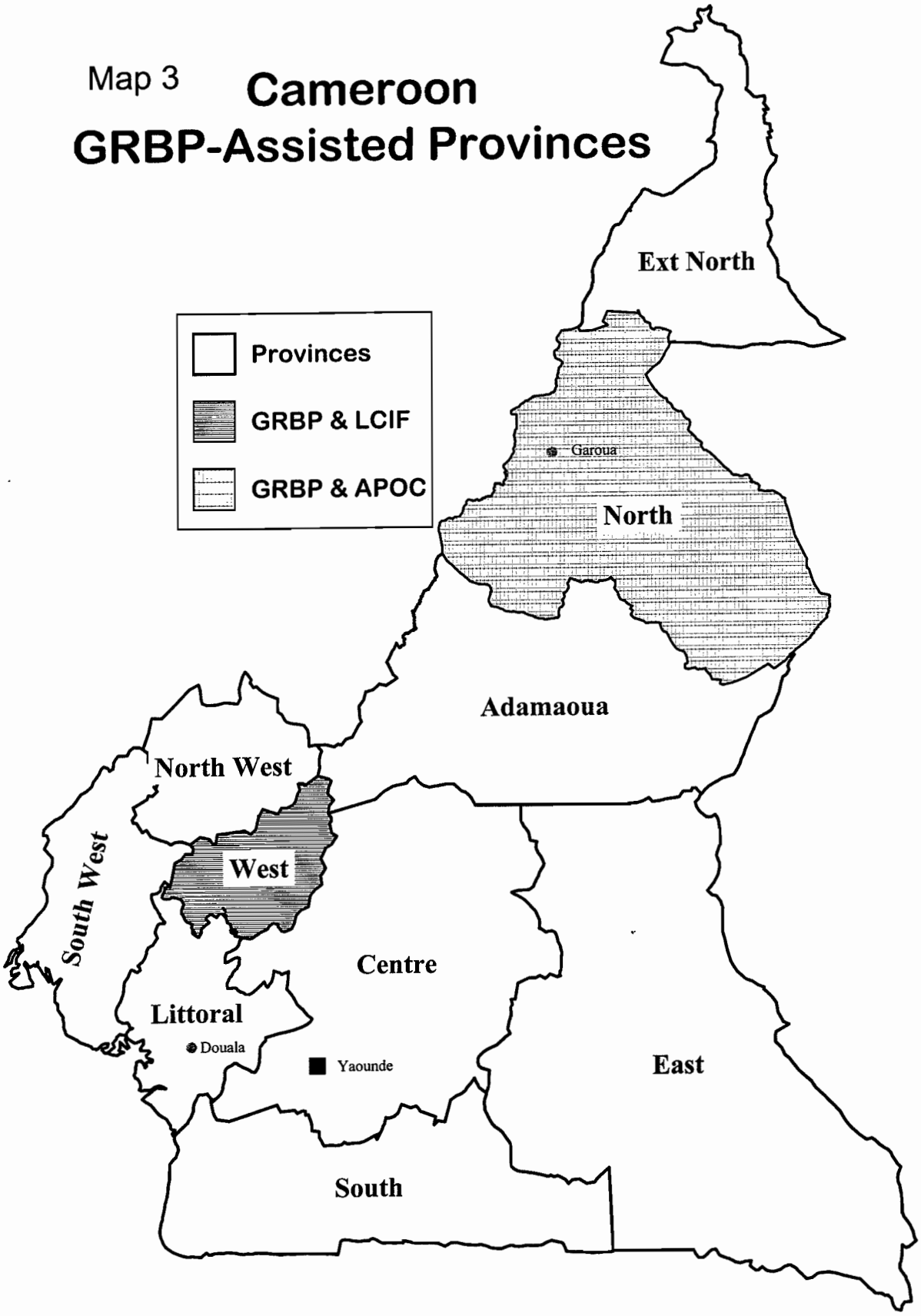
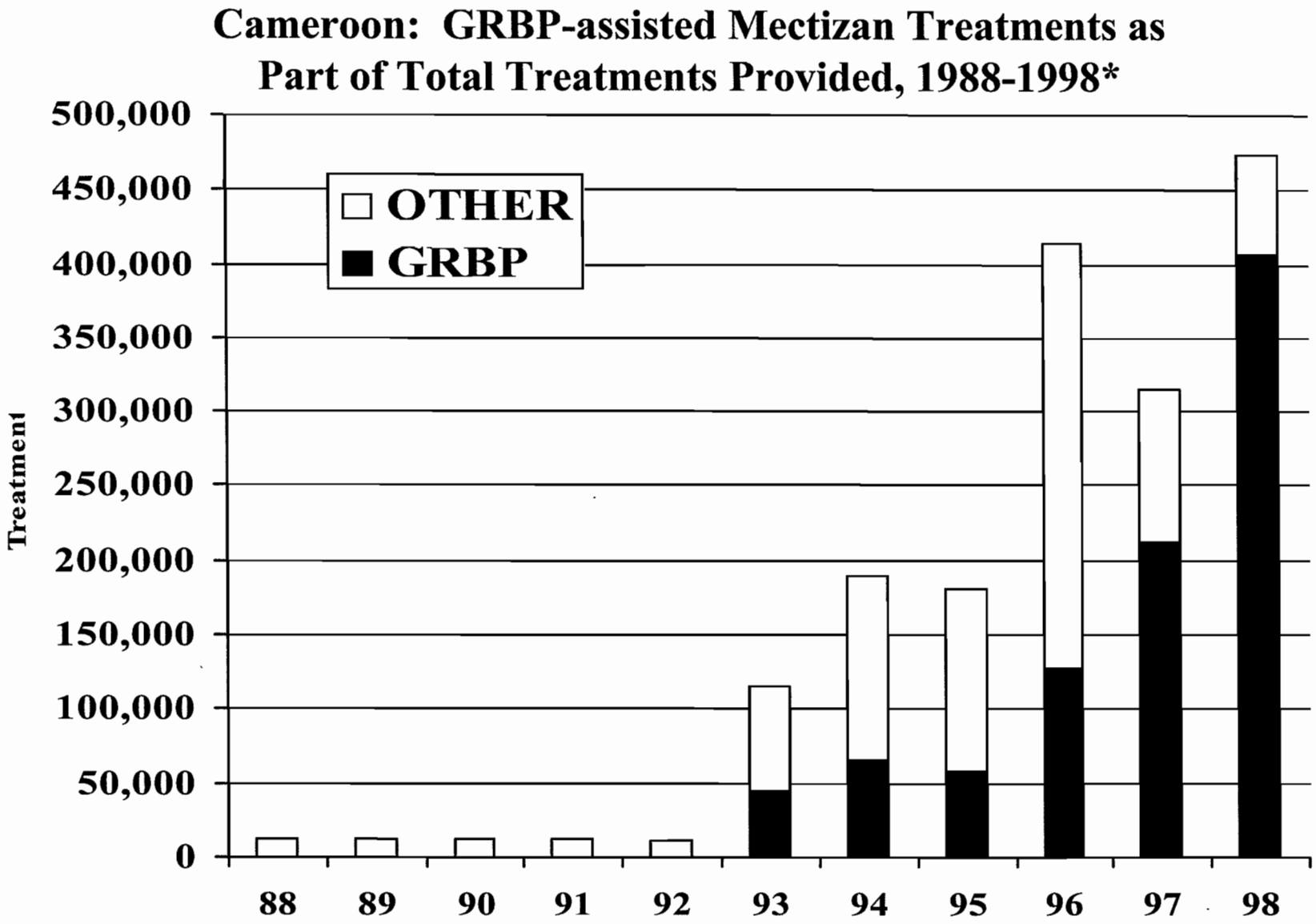


Figure 11

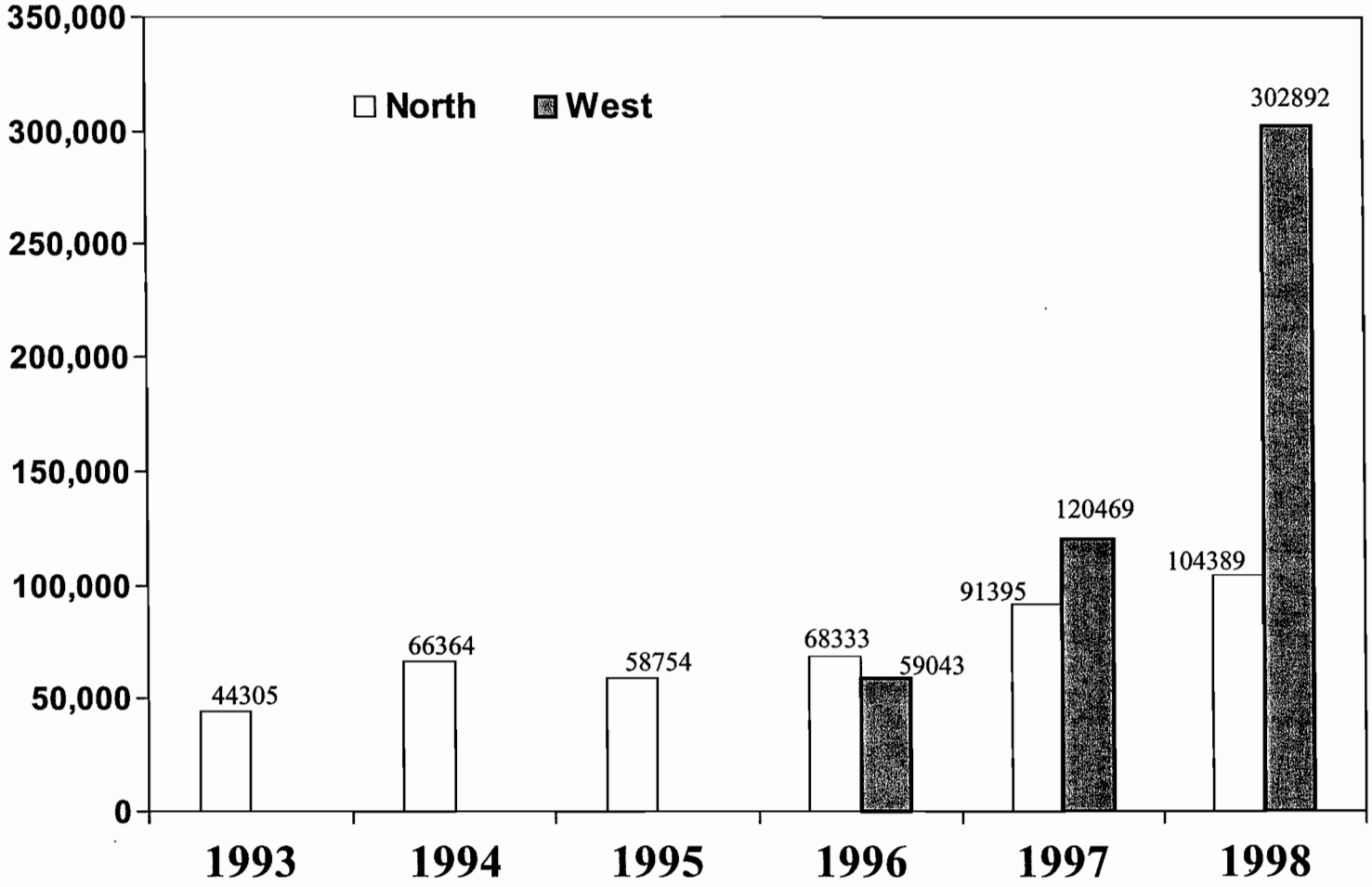


Treatments in 1993-1995 by RBF

***Reporting for non-GRBP-assisted treatments in 1998 incomplete**

Figure 12

Cameroon: GRBP-assisted Mectizan Treatments in North and West Provinces, 1993-1998



Treatments in 1993-1995 by RBF

TABLE 6

MONTHLY GRBP-ASSISTED CAMEROON TREATMENTS, 1998 AND 1997, BY PROVINCE

1998

Province Category		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL	% ATO	% ALL GRBP TX
North	ATO(earp)=	129,356		ATO(arv)=	431		ATO(hrv)=	431								
TX(earp)			2,413	17,303	27,669	22,417	21,724	1,588	11,275	0	0			104,389	81%	26%
TX(arv)			8	114	123	85	66	11	8	0	0			415	96%	32%
TX(hrv)			8	114	123	96	52	11	8	0	0			412	96%	36%
West	ATO(earp)=	470,039		ATO(arv)=	1,622		ATO(hrv)=	1,182								
TX(earp)		35,788	18,650	10,288	12,677	15,609	26,860	23,122	11,286	25,245	2,467	45,929	74,971	302,892	64%	74%
TX(arv)		125	78	42	49	65	97	91	32	65	10	22	213	889	55%	68%
TX(hrv)		91	64	40	47	63	78	91	31	40	7	19	168	739	63%	64%
TOTAL	ATO(earp)=	599,395		ATO(arv)=	2,053		ATO(hrv)=	1,613								
TX(earp)		35,788	21,063	27,591	40,346	38,026	48,584	24,710	22,561	25,245	2,467	45,929	74,971	407,281	68%	100%
TX(arv)		125	86	156	172	150	163	102	40	65	10	22	213	1,304	64%	100%
TX(hrv)		91	72	154	170	159	130	102	39		7	19	168	1,151	71%	100%

ATO: Annual Treatment Objective TX: Number Treated earp: Eligible At Risk Population arv: At Risk Villages hrv: High Risk Villages (nodule prevalence >20%)

1997

Province Category		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL	% ATO	% ALL GRBP TX
North	ATO(earp)=	120,178		ATO(arv)=	431		ATO(hrv)=	431								
TX(earp)		0	11,455	20,742	25,141	14,418	7,383	3,314	7,149	1,793	0	0	0	91,395	76%	43%
TX(arv)		0	27	100	153	128	77	27	13	0	0	0	0	525	122%	54%
TX(hrv)		0	27	100	153	128	77	27	13	0	0	0	0	525	122%	44%
West	ATO(earp)=	464,907		ATO(arv)=	275		ATO(hrv)=	275								
TX(earp)		3,403	8,257	2,569	3,728	2,113	2,134	2,875	1,984	8,782	2,704	12,800	69,120	120,469	26%	57%
TX(arv)		17	16	20	19	19		25	34	256	34			440	160%	46%
TX(hrv)		15	16	20	19	19		25	34	256	256			660	240%	56%
TOTAL	ATO(earp)=	585,085		ATO(arv)=	706		ATO(hrv)=	706								
TX(earp)		3,403	19,712	23,311	28,869	16,531	9,517	6,189	9,133	10,575	2,704	12,800	69,120	211,864	36%	100%
TX(arv)		17	43	120	172	147	77	52	47	256	34	0	0	965	137%	100%
TX(hrv)		15	43	120	172	147	77	52	47		256	0	0	1,185	168%	100%

SUDAN

There are an estimated two million persons at-risk of onchocerciasis in Sudan, and 10,000 cases of onchocerciasis-related blindness. Of the several endemic areas in the country, the southern (principally southwestern) focus is the most significant and is characterized by high prevalence of blinding onchocerciasis. Indeed, some of the highest rates of blindness due to onchocerciasis in the world occur in the southwestern focus of Sudan.

The decades-old civil war in Sudan continues and as a result, channels of communication across the battle line between the Government of Sudan (GOS) and the rebel-held areas in the south remain key to coordinate and accelerate the onchocerciasis program. Operation Lifeline Sudan (OLS) is a consortium of NGDOs and United Nations agencies (UNICEF is the lead agency) working in the contested southern part of the country. HNI has the lead role in coordinating the distribution of Mectizan® in rebel held areas in a program known as the South Sudan Onchocerciasis Control Program (SSOCP). SSOCP is composed of NGDOs with onchocerciasis control activities in areas served by OLS. HNI works closely with the Sudan Relief and Rehabilitation Association (SRRA) to standardize training and reporting formats for the more than 30 NGDOs engaged in treatment activities. In early 1997, Sudan established an NOTF that included both the GOS and SSOCP. The NOTF has been successful in obtaining support for Sudan's campaign against onchocerciasis from LCIF (through The Carter Center) and APOC. As a result, treatments in Sudan have been steadily increasing, despite the war.

Treatment Activities: In 1998, Mectizan® distribution activities greatly improved in both the northern and southern regions, despite the continuing civil conflict, famine, drought, and floods. The distribution of Mectizan® in Sudan was relatively even across the country despite the war. A total of 278,444 persons received Mectizan® treatments in Sudan, a 199% increase compared to the 1997 total of 93,138 (Figure 13). Of these treatments, 58% (160,985) were administered by GOS (with support from LCIF, GRBP and APOC) and 42% (117,459) through the SSOCP (with support from HNI, APOC, LCIF and GRBP) as shown in Table 7. LCIF funds provided through The Carter Center helped support the activities of the GOS and three NGDOs active in the SSOCP: Aktion Afrika Hilfe (AAH), International Medical Corps (IMC), and World Vision International (WVI). Together these three NGDOs assisted in the treatment of 47,726 persons in 1998. The remaining 69,733 treatments provided by the SSOCP in 1998 were provided by other NGDOs, with some APOC support (Table 7). The distribution of treatments by area is shown in Figure 14.

APOC: Three external and three internal monitors carried out an independent exercise of the implementation of the CDTI strategy. The team evaluated activities in Juba, Wau, Raja, and Abu Hamad. Their report recognized the difficulty of implementing CDTI in Sudan as communities are constantly being redefined due to civil unrest. There is fluctuating census information, and the culture of people to be served in one community changes with the influx of refugees from other areas. Communities also may disperse in different directions, seeking solace in new and safer locations. Any of these changes has adverse effects on CDTI. In general, communities welcome and are committed to the distribution of free Mectizan®. The monitoring team highlighted the strength of the commitment of all those involved in the project and the successful high-level

advocacy strategy.

Several health education workshops took place on the OLS side in the south in 1998. In May, when APOC funding became available, training became a priority activity. A CDTI workshop was convened at the OLS headquarters in Lokichokio for 35 Sudanese health workers from different parts of south Sudan. The training sessions focused on refresher sessions regarding the disease, treatment, management, and the new 3-mg dosing system. Flip charts and posters were developed with the assistance of the workshop participants.

Sustainability indices:

> ***Community involvement:*** In general, communities welcome and are committed to the distribution of Mectizan® which is given at no cost to them. Any opportunity for treatment is welcomed, and people are willing to cross war barriers to collect the drug. Communities are committed and willing to participate in CDTI activities, but more effort is needed to involve and engage them in the CDTI process.
>
> ***Government involvement:*** The onchocerciasis control program is viewed as an example of a successful health delivery system both in and outside Sudan. As a result, there is significantly more government support of the program. In 1998 it was calculated that the government released about 60% of their commitment to the program.
>
> ***Cost per Treatment:*** The cost per treatment in 1998 was calculated at US $ 0.82.

Assessment: REA has been performed in the most endemic areas in northern Sudan: Juba, Wau, Raja, and Aweil. These regions exhibit high and increasing nodule prevalence rates. In addition, it was noted that in some endemic areas of Sudan, onchocercal skin disease (papular dermatitis) is a better rapid assessment indicator than is the nodule rate. In contrast to REA, REMO is a technique poorly applicable in Sudan, as community stability and environmental factors are important requirements in the REMO exercise. There are few "stable" endemic communities to select for sampling, and displacement of persons from highly endemic communities also displaces the disease from the original environmental conditions that favor onchocerciasis transmission to areas which classically would not be selected for REMO.

Mectizan®: In 1998, the Sudan program experienced losses of Mectizan® in Wau, where 30,000 tablets (6-mg) were stolen when thugs raided the health store there. The program received 1 million tablets (3-mg) from the MDP in March 1998. Of these, 300,000 were used in distributed activities in 1998. At the beginning of 1999, there were currently 385,000 tablets (3-mg) in the field, and 315,000 (3-mg) at the head office in Khartoum which should be sufficient for treatment activities in 1999. Therefore, no application for Mectizan® will be made to MDP in 1999. The transition from the 3-mg tablet to the 6-mg tablet formulation has been smooth in Sudan. The primary challenge in this respect remains the wastage that will be expected from passive treatment, since once the bottles are open the tablets must be administered within eight weeks.

Constraints:

In 1998, ivermectin distribution activities took place in Sudan despite the following difficult circumstances:

- The civil conflict has intensified the migration of people and disease (increased conflict in 1997 was responsible for low treatments that year).
- Disasters such as the famine in Bahr el Ghazal resulted in a state of total need. The priorities were food and clean water.
- There was a sudden evacuation of NGDOs from south Sudan due to non-cooperation from warring parties. In many ways, the fighting factions direct the program by placing demands on the program and denying travel permits.
- Treatment activities occur in areas devoid of any health infrastructure, or in areas where the Primary Health Care (PHC) system is non operational. This makes incorporating the program into an existing PHC impossible or extremely difficult.
- Other diseases such as diarrhea, tuberculosis, trypanosomiasis, and malaria are prevalent and lethal (compared to onchocerciasis) conditions. The onchocerciasis control program is sometimes the only health program in operation, therefore introducing an ethical element where the provision of health services for these other diseases is also urgently needed.
- Loss of trainers and trainees. Three CDDs were shot and killed in 1998 while administering ivermectin. The deputy chairman of a zonal Onchocerciais Task Force had to flee an area of conflict, and later died due to exposure and diarrheal complications.
- The departure of Medecins Sans frontier Belgium (MSF-B) from south Sudan will be a significant loss. MSF-B treated about 50,000 people annually.
- In some areas people are used to taking DEC tablets for onchocerciasis, and they are skeptical about the new treatment with Mectizan® .

SUDAN RECOMMENDATIONS 1999

Activities in conflict areas: The essence of CDTI in Sudan is to involve the community in the planning and distribution of Mectizan® in the context of a war situation. It was recommended that:

- In areas where treatments are ongoing, the project be decentralized as much as possible, with local execution and decision-making. This could allow continued Mectizan® delivery if NGDOs or the government were forced to evacuate.
- Treatments be extended to new areas as they become accessible.
- Flexibility and creativity be used whenever possible to in developing Mectizan® delivery strategies that meet the needs of the difficult security situation in Sudan.

APOC:

- An emphasis must be placed on APOC funds reaching the field in advance of mass treatment activities being undertaken.
- The CDTI program must focus on training and should identify CDDs who originate from the southern areas who speak the local language and are from the same culture.

Treatments:

- Establish an ATO for 1999
- Improve monthly reporting of data by NGDOs.
- Refine the eligible at risk and total population data.

Sustainability:

- Develop specialized health education efforts that focus on countermeasures for the myths associated with Mectizan®.

Map 4

Onchocerciasis in Sudan

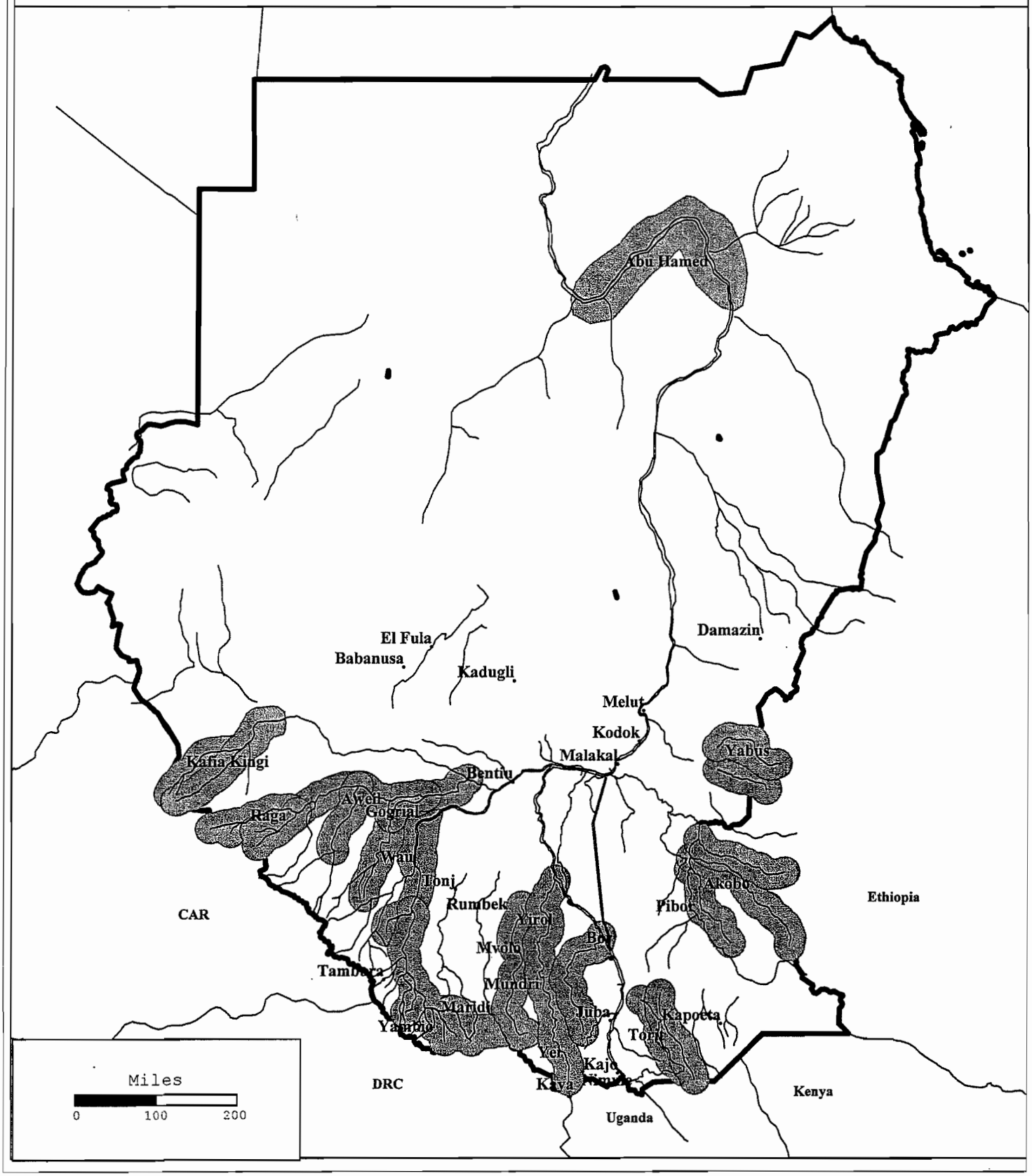
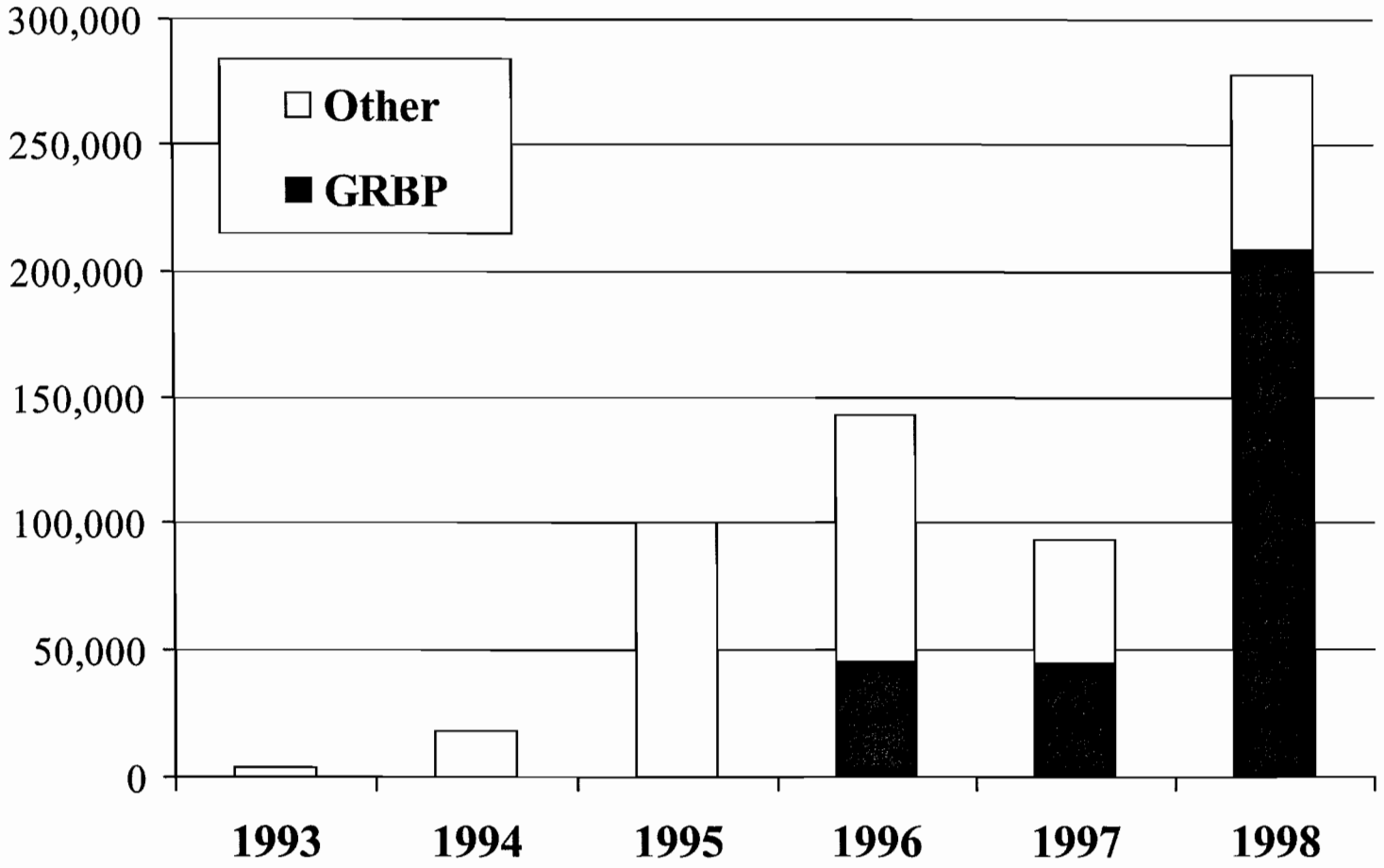


Figure 13

Sudan: GRBP-Assisted Mectizan® Treatments as Part of the Total Treatments Provided, 1993-1998



Since 1997, GRBP activities in Sudan have been supported by Lions Clubs International Foundation

Figure 14

1998 Mectizan Treatments in Sudan, by Area

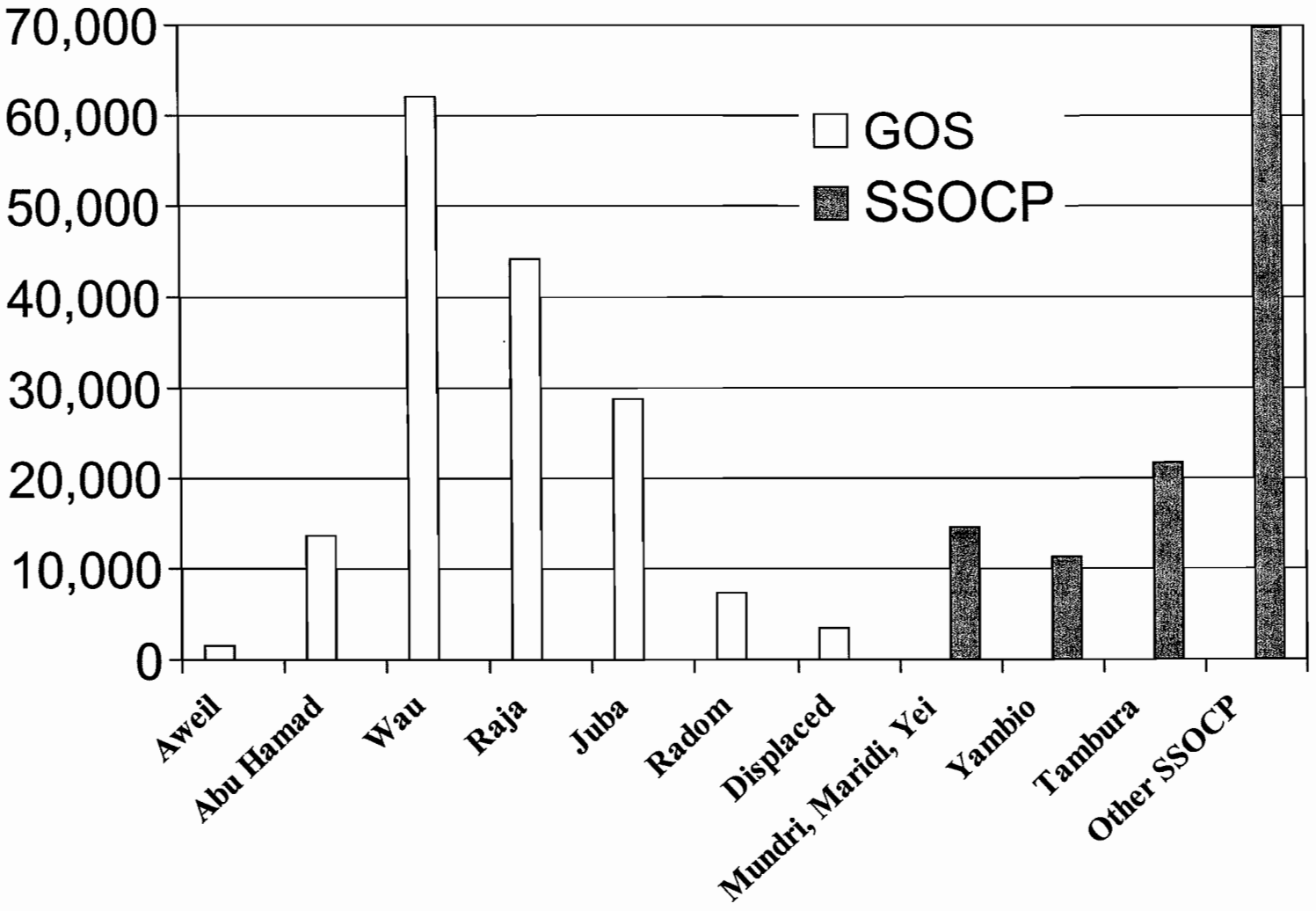


TABLE 7

SUDAN MECTIZAN TREATMENTS IN 1998, BY AREA

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL	% of ATO	% Total
GOS	**ATO (earp)=**														
West Bahr Al Ghazal															
Raja						**39555**			**4218**	**389**			**44162**		21%
Wau						**27955**		**9945**	**14006**	**4746**	**4093**	**1294**	**62039**		30%
Other													**0**		0%
North Bahr Al Ghazal													**0**		
Aweil						**1525**							**1525**		1%
East Equatoria State													**0**		0%
South Darfur State													**0**		
Radom						**7222**							**7222**		3%
Northern State													**0**		
Abu Hamad						**11215**					**2485**		**13700**		7%
Bahr Al Jabal													**0**		
Juba						**4896**			**2948**	**9322**	**9812**	**1811**	**28789**		14%
Displaced camps (El Obeid & Khartoum)						**3140**			**408**				**3548**		2%
													0		
GOS Total (GRBP-assisted)	**0**	**0**	**0**	**0**	**0**	**95508**	**0**	**9945**	**21580**	**14457**	**16390**	**3105**	**160985**		**77%**
SOUTH SUDAN	**ATO (earp)=**														
State: Western Equatoria															
AAH (Maridi, Mundri, and Yei Counties)	994	1037	1177			3457			4190			3853	**14708**		7%
WVI (Yambio County)	659	136	323			1795			2238			6149	**11300**		5%
IMC (Tambura County)	2033	1093				4172			4454			9966	**21718**		10%
SSOCP (GRBP-assisted)	**3686**	**2266**	**1500**	**0**	**0**	**9424**	**0**	**0**	**10882**	**0**	**0**	**19968**	**47726**		**23%**
OLS/SSOCP (other than GRBP assisted)													**69733**		
	TOTAL SUDAN ATO=														
TOTAL SUDAN													**278444**		
TOTAL SUDAN (GRBP-assisted)	**3686**	**2266**	**1500**	**0**	**0**	**104932**	**0**	**9945**	**32462**	**14457**	**16390**	**23073**	**208711**		**75%**

ATO: Annual Treatment Objective TX: Number Treated
earp: Eligible At Risk Population

ONCHOCERCIASIS ELIMINATION PROGRAM FOR THE AMERICAS (OEPA)

OEPA is a regional coalition working to eliminate morbidity, and whenever possible, transmission of onchocerciasis in the Americas through sustained distribution of Mectizan® . Semi-annual treatment (i.e., every six months) is advocated. The OEPA initiative began shortly after passage of the 1991 Resolution XIV of the XXXVth PAHO. The Resolution called for the elimination of onchocerciasis as a public health problem in the Americas by the year 2007. The OEPA coalition includes ministries of health of the six countries (Brazil, Colombia, Ecuador, Guatemala, Mexico, and Venezuela), The Carter Center, PAHO, InterAmerican Development Bank, MDP and the CDC. GRBP coordinates much of the technical and financial assistance to the initiative.

IACO'98: Representatives of the six endemic American countries have met annually since 1991 at the InterAmerican Conferences on Onchocerciasis (IACOs). The eighth conference (IACO '98), which had the theme "Strategies for attaining high coverage and sustainability in ivermectin treatment programs in the Americas," was held in Caracas, Venezuela on 17-19 November 1998. IACO'98 was attended by representatives from five of the six endemic countries (Guatemala was absent due to the crisis provoked by Hurricane Mitch), and, as customary, each representative presented their progress for the year. In an address to IACO'98 in Spanish, former US President Jimmy Carter expressed via videotape his commitment to the goal of eliminating onchocerciasis from the Americas.

In addition to reporting on program progress, IACO '98 focused on monitoring sustainability of ivermectin delivery and reporting systems. Working groups proposed possible factors in program sustainability that included the importance of governmental commitment, integration into the primary health care system, and community participation. GRBP found that, unlike APOC, cost per treatment and total cost of the elimination program were not good indications of sustainability in the western hemisphere. The participation of international institutions was identified as extremely important in the sustainability of the OEPA regional initiative. Such organizations stimulate not only public and governmental support and visibility, but also facilitate funding, extend technical assistance, and provide a forum for communication and encouragement. OEPA was given a vote of confidence by IACO'98, and participants expressed a strong desire for its continued existence.

Treatments: In 1998, GRBP treated 270,622 persons with ivermectin, an increase of 54,656 (25.3%) over 1997 (Figure 15). Table 8 indicates treatments by country for 1997 and 1998, and is graphically illustrated (for the years 1996-98) in Figure 16.

1. Brazil provided ivermectin treatments to 1,573 persons in 69 communities (of which 44 were hrv's where the infection prevalence is $\geq 60\%$). Treatments in Brazil represented an 84.6% increase from 1997 treatments, and 66.9% of its ATO of 2,350. The treatments were provided primarily in migratory Yanomami communities in the northern states of Roraima and Amazonas.

2. Colombia has a single known endemic community (Naicioná, in the municipality of López

de Micay, Department of Cauca). In 1998, the endemic area had a population of 730 persons living in an area of 15 square kilometers. Two rounds of (semiannual) treatment were provided in the third year of the program: 527 of 599 (88%) persons eligible were treated in the first round and, in the second round, 677 were treated of the 730 (92.7%) eligible. The number of eligible individuals varied at each round due to the presence of a changing population of migrant miners living in the endemic zone. IACO'98 believed that onchocerciasis transmission has probably been interrupted in Naicioná, and thus in Colombia.

3. Ecuador treated 17,522 (90.9%) of a 19,284 ATO for 1998. This represented a 9.6% increase in treatments compared to 1997. All 120 endemic communities were reached, including the 42 high risks ones (40 of these 42 hrv's have been treated for at least nine years). The population of the hrv's (3,559) is offered treatment twice per year; in 1998, 3,347 persons received two treatments (94.0%). Ecuador is believed to be ready for certification of elimination.

4. In Guatemala, a written report to IACO from the national program authorities noted that a single round of treatment had been provided in 1998 in 362 endemic villages (including all 45 high-risk villages) to 92,805 individuals, which represented (55.4%) of the 1998 ATO of 167,499. Although attainment of the ambitious 1998 ATO was low, overall 1998 treatments represented a 48.2% increase over treatments provided in 1997. A reassessment of the available epidemiological data for Guatemala resulted in a 50% reduction of the estimated population at risk for onchocerciasis in the country, to 200,000. Small foci in Santa Rosa and San Vicente Pacaya may be ready for certification of elimination.

5. Mexico treated 145,811 persons (96.3% of its 1998 ATO) semiannually in 953 villages, 40 of which were hrv's. This represents a 10.3% increase over 1997, and 53.9% of all ivermectin treatments given in 1998 in the Americas. The Oaxaca focus is ready for certification of elimination.

6. Venezuela: IACO'98 acknowledged the great achievements made by the Venezuelan Elimination Program toward the completion of its epidemiological characterization of two large endemic areas in the north of the country, where 3,456 communities were reported to be endemic for onchocerciasis in 1986 Ministry of Health records. Assessments in 1998 in 695 communities in Anzoategui, Sucre, Monagas, Carabobo, Cojedes, Guarico, Miranda, Yaracuy, and Amazonas States brought the total number of known endemic communities in Venezuela to 529 (of which 68 are classified as hrv's). Venezuelan authorities estimated that in 1999 they could complete assessments of the remaining 1,154 suspected endemic communities, and thus be prepared to launch a complete national treatment effort in 2000. The population at risk in Venezuela is estimated to be 142,400. In addition to its successes in assessment activities, Venezuela reported having treated 12,234 (61.2%) of a 1998 ATO of 20,000. This represented a 212% increase over treatments provided in 1997.

Ultimate Treatment Goals in the Americas: The launching of the OEPA in 1993 resulted in a focus on standardized epidemiological evaluations that have sharpened the estimates of populations at risk of developing onchocerciasis in the Americas, and thus calculations of numbers of persons who ultimately would require Mectizan® treatment. Progress in 1998 with the epidemiological characterization of northern Venezuela, in particular, has lowered the estimates of the population at risk for onchocerciasis in the Americas to less than 1 million. This is evident in Figure 17, where the number of villages in need of assessment in Venezuela (suspected endemic) decreased from 3,085 in 1995 to 900 in 1998. Figure 18 shows the decreasing trend in the overall population at risk in the Americas, from an estimated 4,700,000 persons at risk in 1995 to 659,618 in 1999. Assuming that the latest estimates of populations at risk will be the ultimate treatment goals that national programs need to achieve to reach full coverage (Figure 19), it can be observed that Colombia, Mexico, and Ecuador are already operating at high coverage levels necessary to eliminate onchocerciasis from their countries. Despite the progress made in 1998, Venezuela represents the major challenge to establishing Mectizan® delivery programs all affected areas of the Americas.

OEPA RECOMMENDATIONS 1998:

Assessments:

- Provide maximum support the Venezuelan program.
- Try to ensure that substantial progress is in increasing treatments in Guatemala in 1999 (IACO 1999 will be held in Guatemala).

Transmission:

- Document the interruption of transmission in the Americas.
- Help standardize polymerase chain reaction (PCR) techniques (to measure infection rates in all major American blackfly vectors) through an OEPA-organized working group.
- Help PAHO establish criteria for certification of onchocerciasis elimination by pushing for approval of the new resolution on onchocerciasis elimination, and by developing a regional process for certification of elimination.

Treatments:

- Advocate continued semiannual treatments in areas where transmission is or can be interrupted.
- Publish a *Weekly Epidemiological Record* summary highlighting progress in 1998.

Mectizan® :

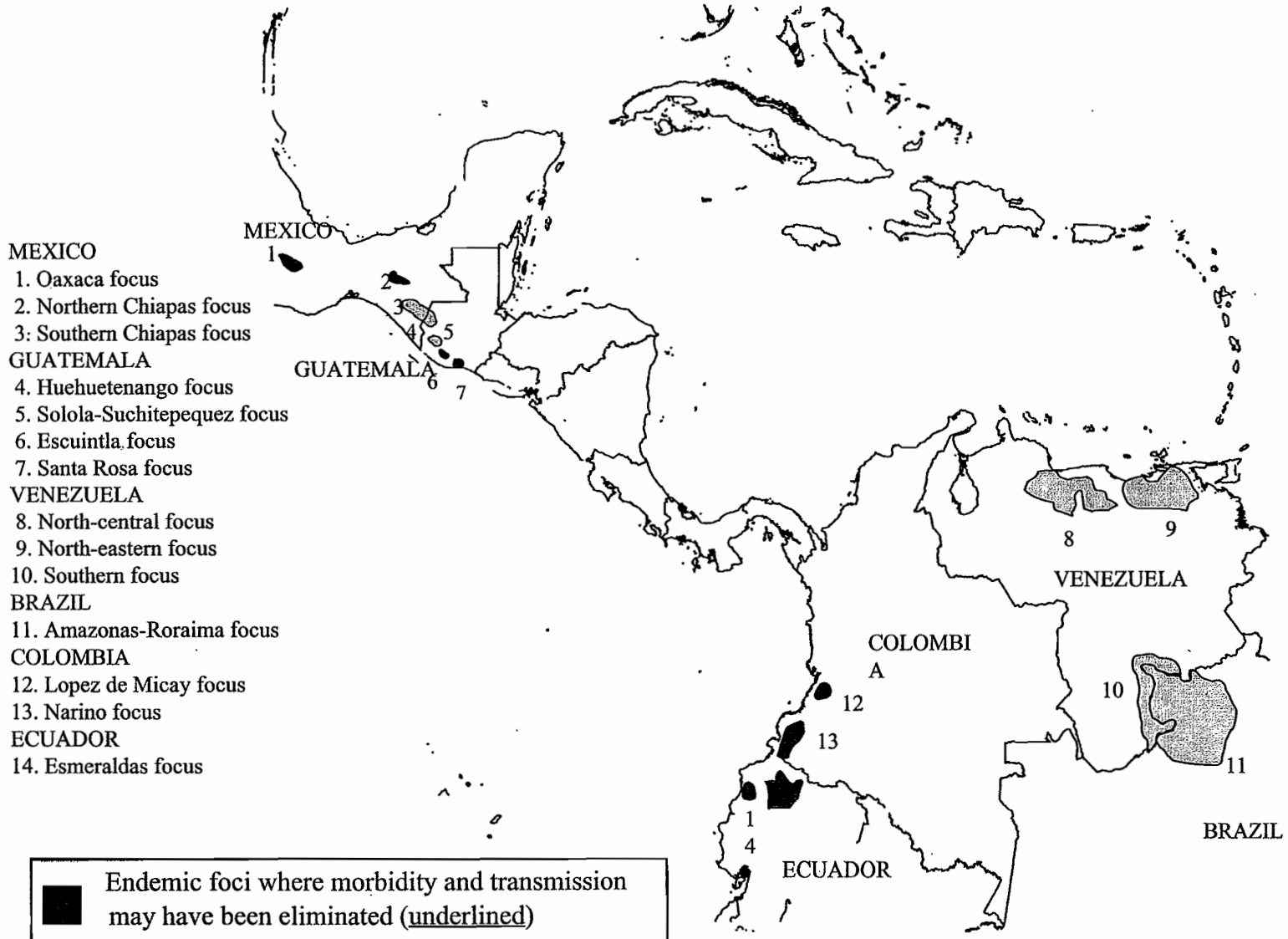
- Assist the Mectizan Donation Program whenever possible with issues related to importation of Mectizan® into the Americas.

Certification:

- Document the elimination of onchocerciasis transmission and morbidity by funding "certification exercises" in Colombia, Ecuador, and Mexico.
- Strengthen political support for the initiative in countries and at PAHO

Map 5

Geographic distribution of endemic onchocerciasis in the Americas



MEXICO
1. Oaxaca focus
2. Northern Chiapas focus
3: Southern Chiapas focus

GUATEMALA
4. Huehuetenango focus
5. Solola-Suchitepequez focus
6. Escuintla focus
7. Santa Rosa focus

VENEZUELA
8. North-central focus
9. North-eastern focus
10. Southern focus

BRAZIL
11. Amazonas-Roraima focus

COLOMBIA
12. Lopez de Micay focus
13. Narino focus

ECUADOR
14. Esmeraldas focus

Endemic foci where morbidity and transmission may have been eliminated (underlined)

Other endemic foci

Based on:
Weekly Epidemiological Record 1996;71:278
WHO Technical Report 852, 1995

TABLE 8

TREATMENTS IN THE AMERICAS, 1998 AND 1997, BY COUNTRY

1998

OEPA	ATO(earp)	TX(earp) Cum 1998	TX(earp) % ATO	ATO(arv)	TX(arv) Cum 1998	TX(arv) % ATO	ATO(hrv)	TX(hrv) Cum 1998	TX(hrv) % ATO
Brazil	2174	1573	72%	74	69	93%	36	44	122%
Colombia	730	677	93%	1	1	100%	0	0	0%
Ecuador	18388	17522	95%	120	120	100%	43	43	100%
Guatemala	167499	92805	55%	517	362	70%	45	45	100%
Mexico	151453	145811	96%	947	947	100%	97	97	100%
Venezuela	20000	12234	61%	150	190	127%	31	45	145%
Total	**360244**	**270622**	**75%**	**1809**	**1689**	**93%**	**252**	**274**	**109%**

1997

Country	ATO(earp)	TX 1997	% ATO	ATO(arv)	TX 1997	% ATO	ATO(hrv)	TX 1997	% ATO
Brazil	2800	852	30%	64	37	58%	36	28	78%
Colombia	432	347	80%	1	1	100%	0	0	0%
Ecuador	17347	15989	92%	119	119	100%	43	43	100%
Guatemala	167499	62634	37%	517	252	49%	45	45	100%
Mexico	151773	132221	87%	947	916	97%	97	97	100%
Venezuela	22000	3923	18%	280	63	23%	30	27	90%
Total	**361851**	**215966**	**60%**	**1928**	**1388**	**72%**	**251**	**240**	**96%**

ATO: Annual Treatment Objective TX: Number Treated earp: Eligible At Risk Population
arv: At Risk Villages hrv: High Risk Villages (nodule prevalence >19% or mf prevalence>39%)
*OEPA figures reported quarterly: hrv villages reflect prevalence at time of initiation of Mectizan therapy;
OEPA uses >59% mf prevalence as hrv definition

Figure 15

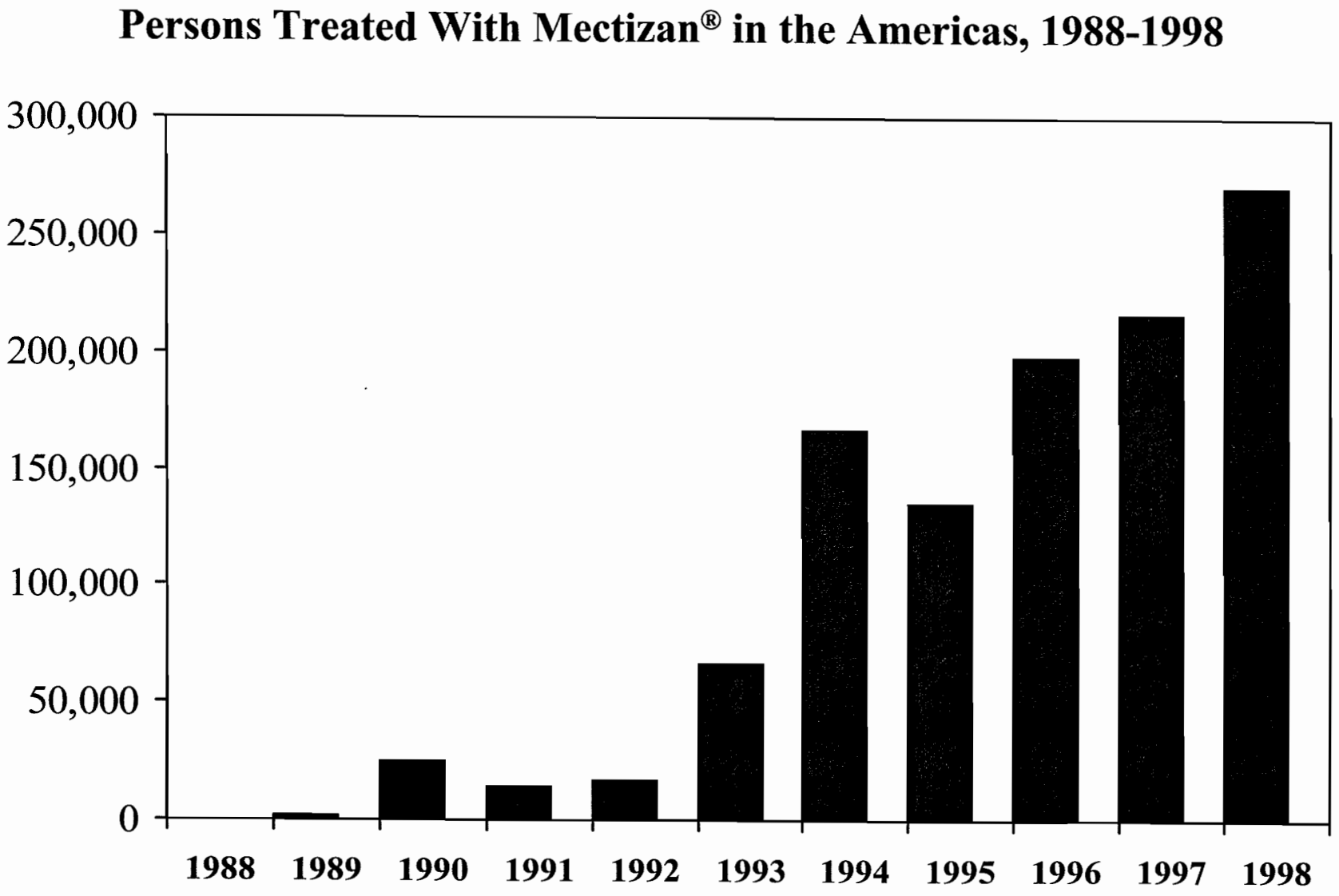

Persons Treated With Mectizan® in the Americas, 1988-1998
300,000
250,000
200,000
150,000
100,000
50,000
0
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998

Figure 16

1996 - 1998 Mectizan Treatments in the Americas, by Country

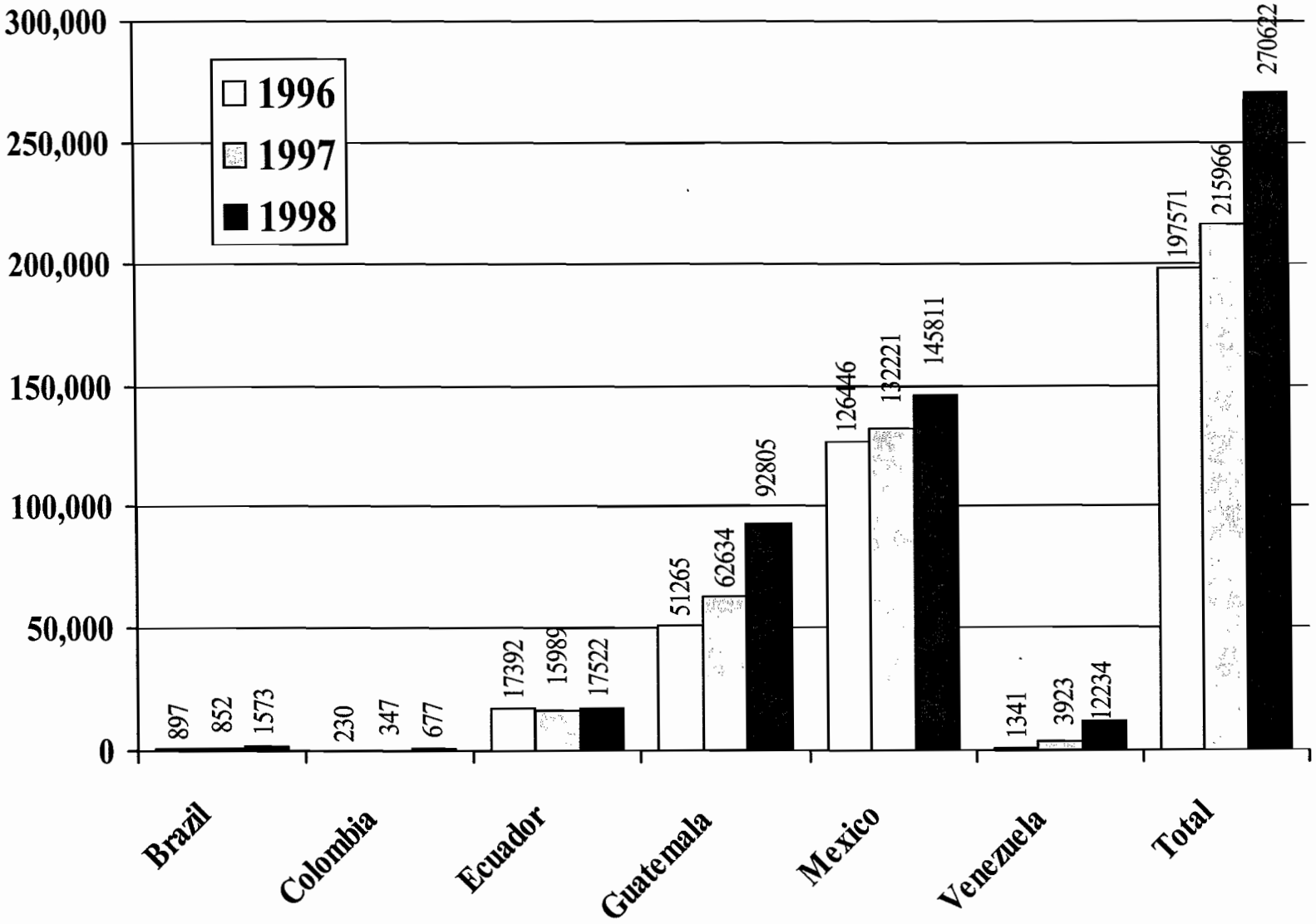


Figure 17

Onchocerciasis in the Americas -
AT RISK VILLAGE ASSESSMENTS IN THE AMERICAS: 1995 versus 1998

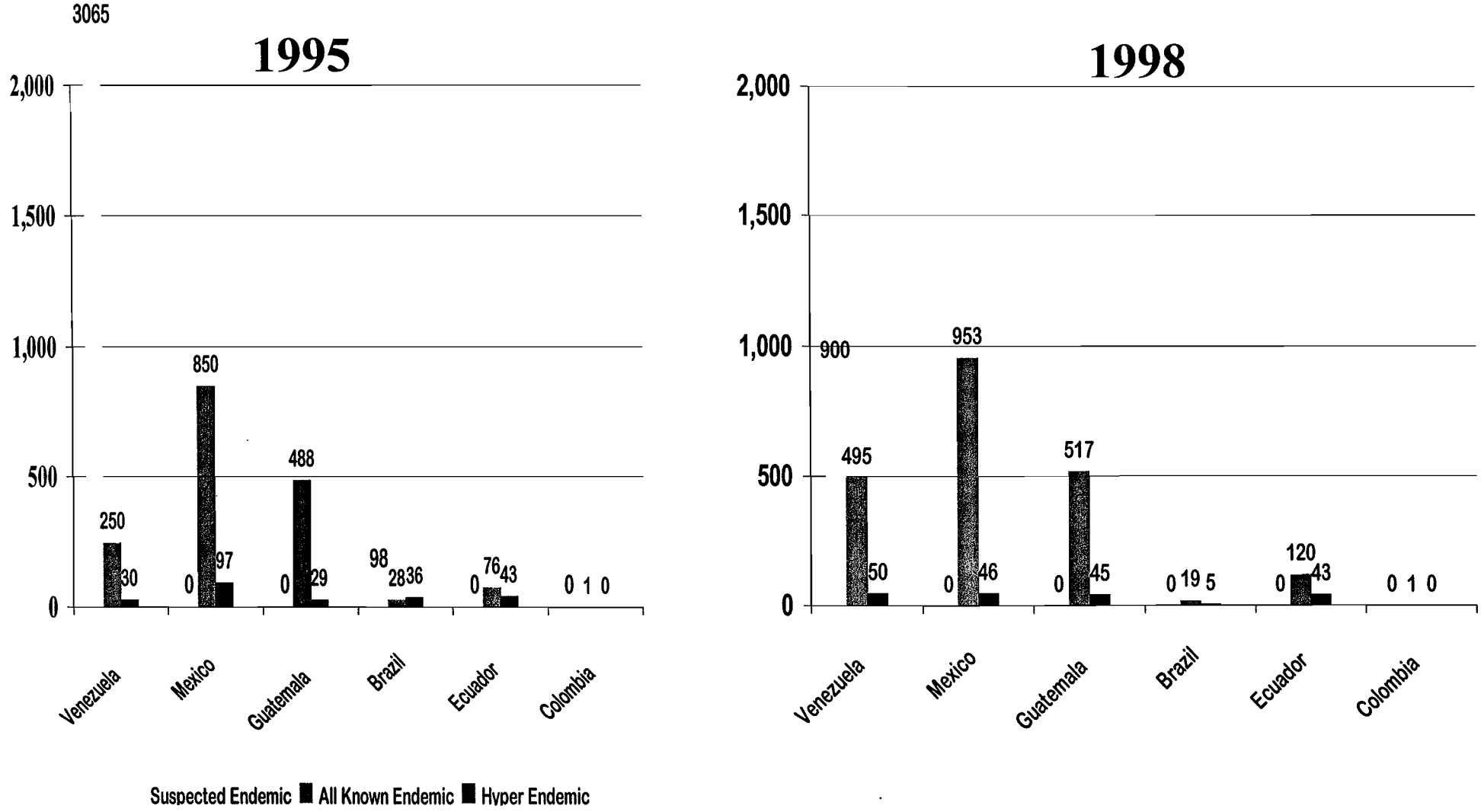
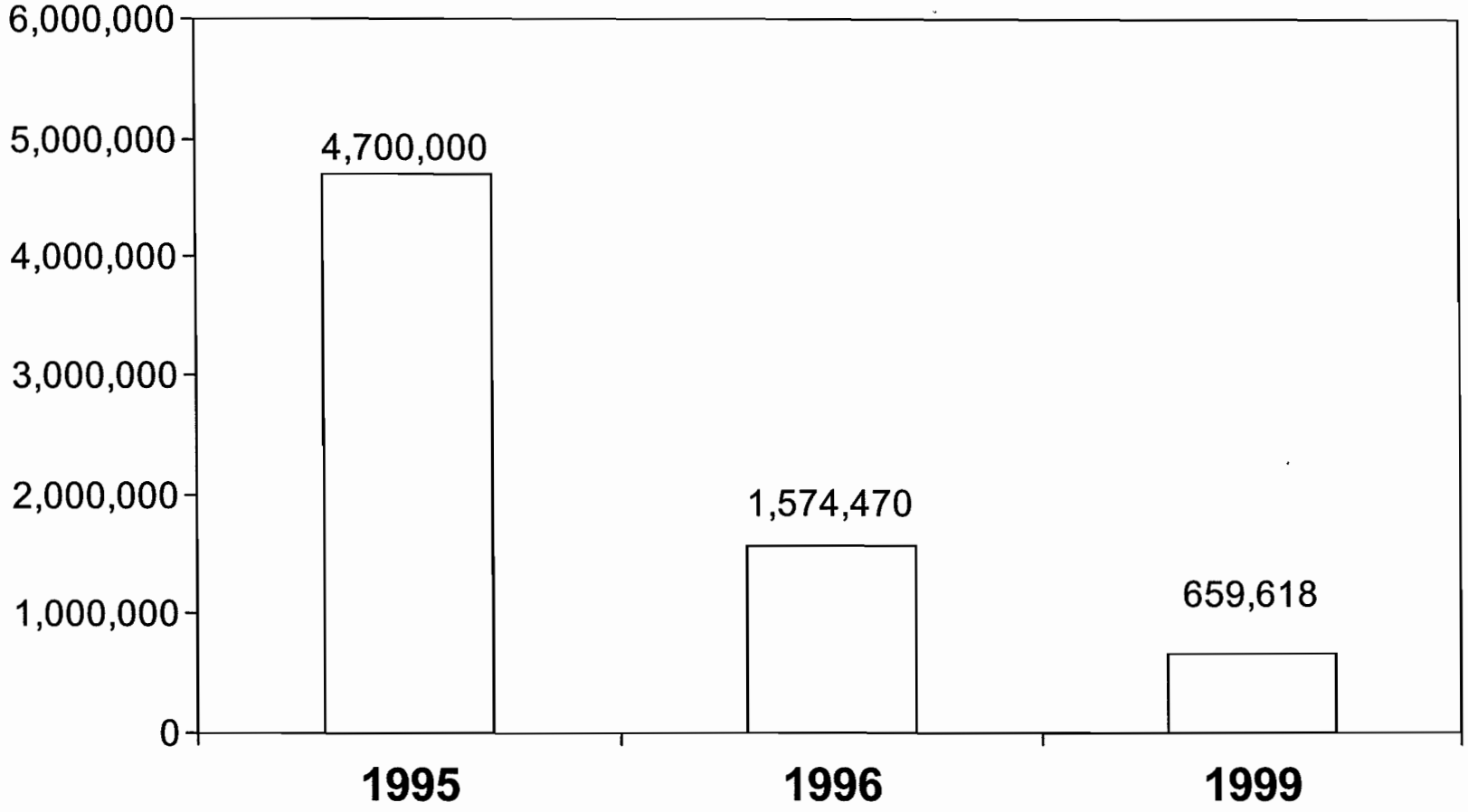


Figure 18

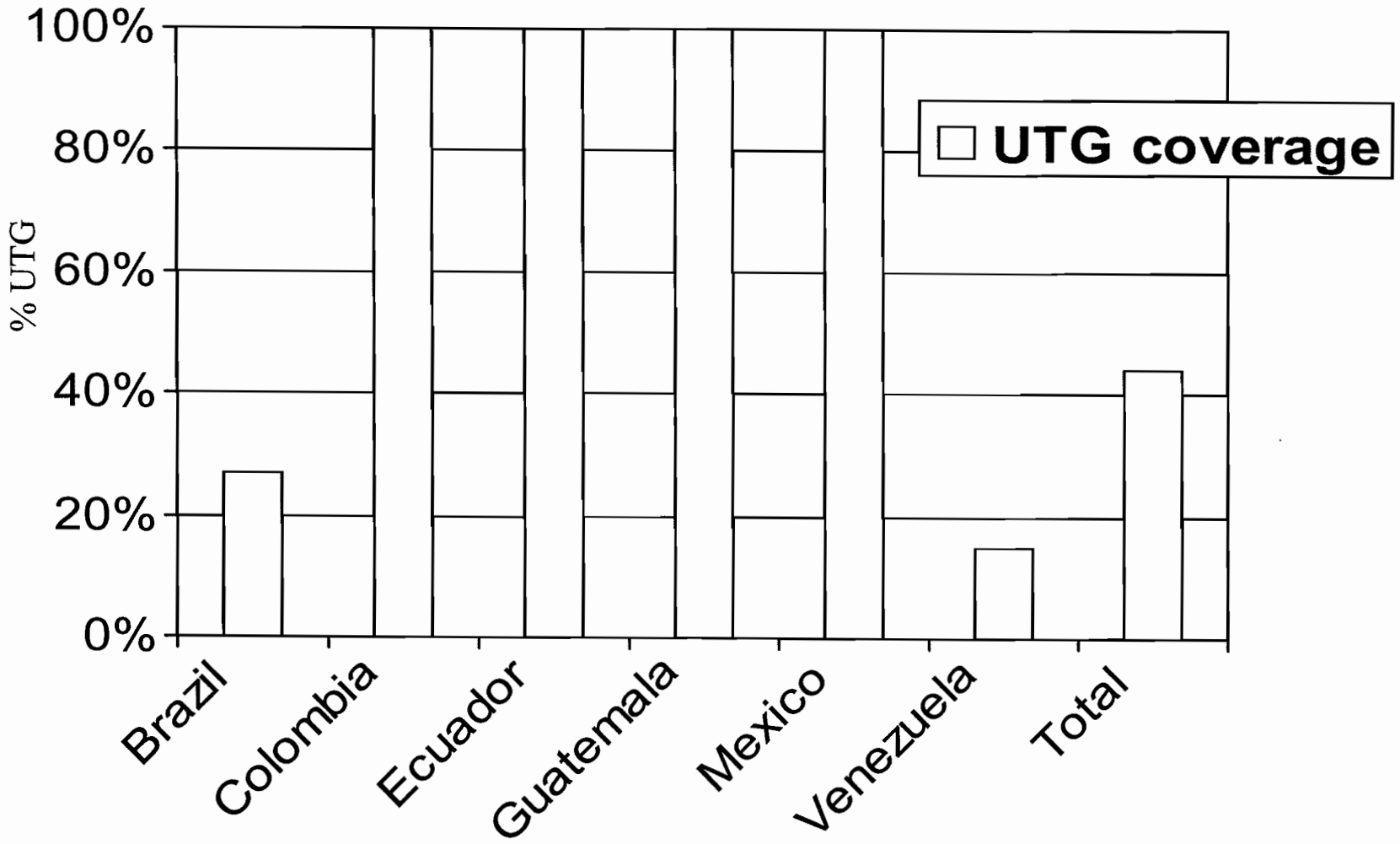
Onchocerciasis in the Americas: Refinement of the at-risk population, by year



Source 1995 data, WHO Technical Report Series 1995;852:30
Source 1996 data, WER 1996;71:277-280

Figure 19

1999 ATO as percentage of national ultimate treatment goals (UTGs), the Americas



ANNEXES

ANNEX 1 LIST OF PARTICIPANTS

GRBP Headquarters

Mr. Andy Agle
Dr. Donald Hopkins
Ms. Marisa Jensen
Ms. Wanjira Mathai
Dr. Frank Richards (Chair)
Mr. Rick Robinson
Dr. Ernesto Ruiz-Tiben
Ms. Shandal Sullivan
Mr. Mark Tewari
Mr. Wyatt Ware
Mr. Craig Withers
Ms. Pamela Wuichet
Dr. James Zingeser

Country Representatives

Dr. Albert Eyamba - Cameroon
Mr. Moses Katabarwa - Uganda
Dr. Emmanuel Miri - Nigeria
Dr. Mauricio Sauerbrey - Latin America/OEPA

Mectizan® Donation Program

Dr. Mary Alleman
Dr. Bruce Dull
Dr. Stefanie Meredith

Other participants

Dr. Brian Bagnall- SmithKline Beecham
Mr. Ross Cox- Centers for Disease Control
Ms. Irene Goepp - HealthNet, SSOCP, Nairobi, Kenya (Sudan)
Dr. Mamoun Homeida - Chair, NOTF, Sudan
Mr. Jeremy Horowitz - Helen Keller International
Dr. Charles MacKenzie - Michigan State University (Sudan)
Ms. Emlyn Jones - Intern, Global 2000
Ms. Jennifer Hegle- Intern, Global 2000

ANNEX 2

Third Annual Program Review Meeting
Global 2000 River Blindness Program
The Carter Center, Cyprus Room
February 17-19, 1999

Opening	Wednesday , February 17, 1999	
8:30-9:30	Welcome and introductory remarks (Objectives of the program review)	Dr. Frank Richards
Nigeria		
9:30-10:30	Nigeria Presentation (Part 1)	Dr. Emmanuel Miri
10:30-11:00	Coffee Break	
11:00-12:00	Nigeria Presentation (Part 2)	Dr. Emmanuel Miri
12:00-1:00	Discussion/recommendations	Dr. Frank Richards
1:00-2:00	Lunch in Copenhill Café	
Uganda		
2:00- 4:00	Uganda presentation	Mr. Moses Katabarwa
4:00-4:30	Coffee Break	
4:30-5:30	Discussion/recommendations	Dr. Frank Richards
5:30	End of day's session	

Thursday, February 18, 1999

OEPA		
7:00- 9:00	Board of Councillors Meeting	The Carter Center

9:00-11:00	OEPA presentation	Dr. Mauricio Sauerbrey
11:00-11:30	Coffee Break	
11:30-12:30	Discussion/recommendations	Dr. Frank Richards
12:30-1:30	Lunch at Copenhill Café	

Sudan

1:30-2:30	Lymphatic Filariasis	Dr. Miri/Dr. Richards
2:30-3:30	Sudan (part 1)	Dr. Mamoun Homeida
3:30-4:00	Coffee Break	
4:00-5:00	Sudan (part 2)	Ms. Irene Goepp
5:00- 6:30	Discussion/recommendations	Dr. Frank Richards

ANNEX 3 QUARTERLY REPORTING OF INDICES OF SUSTAINABILITY

GRBP programs are asked to report quarterly on three sets of indices for sustainability, including: Community involvement (absolute and expressed as a percentage of total communities treated), National and Local Government involvement (absolute and expressed as a percentage of total communities treated), and Costs (absolute and expressed as cost per treatment). The last index is to be calculated as well in terms of government and APOC contributions.

Community involvement: Indicate the number and percent of treated villages in which the community is involved in the design and implementation of the treatment program and in the selection of their community-based distributor (CBD). If data are available on monetary or in kind community support for CBDs, formation of village health committees, and community support for CBDs to collect ivermectin from a central point, these should also be mentioned.

Government involvement: Indicate the number and percent of treated villages in which the CBD is a part of, or is supervised by, the primary health care system. Does the local and central government have a line item for onchocerciasis control in its budget? If yes, how much of this budget has been released to the program?

Cost per treatment: Estimate the cost per person treated with Mectizan® as three different indices:

Actual costs of treatment: This calculation includes all costs, including: a) a proportion of HQ costs, overhead and salaries, b) your local GRBP HQ costs, overhead and salaries, c) delivery of Mectizan® from the port of entry to community, including collecting the drug from a central point by CBD, d) training, e) MOH/PHC supervision and monitoring of the program, and f) remuneration/incentives paid to CBDs by the community, which could include cost recovery mechanisms.

Cost provided by national government: Provide also the government provided cost per treatment, and the percentage the government is paying of actual costs. Do not include village support.

Cost allowed and/or provided by APOC/OEPA: Provide also the amount that APOC (OEPA in the Americas) provide per capita treatment, and the percentage APOC (OEPA) is paying of actual costs.

ANNEX 4 MECTIZAN® DONATION PROGRAM ISSUES

Summary of Dr. Mary Alleman's presentation on the 3-mg tablet transition): A 1998 study was commissioned by MDP in Mali and Malawi to assess the 3-mg tablet transition. In Mali, the study was carried out in collaboration with HKI and the local Malian social scientists and in Malawi by a consultant hired by MDP, and implemented by social scientists and the IEF there. The main objective was to identify issues that had arisen in the transition. Therefore, a qualitative assessment was carried out with methods that included in-depth interviews and focus group discussions with drug recipients.

Conclusions and Recommendations:

- The 3-mg tablets and 500 tablet bottles had the advantage of being easy to transport and administer, simplifying operations.

- However, the disadvantage of having many more tablets in the bottle necessitated retrieving and re-allocating the unused tablets prior to expiration. It was recommended that all 6-mg tablets be retrieved with the distribution of the 3-mg tablet to prevent potential dosing errors. This collection exercise was found to be time consuming and expensive for the programs.

- Training of CDDs should be done just prior to distribution exercise and after the new tablet formulation has arrived in country so that the CDDs can see them during the training.

- Sensitivity should be heightened during training on issues related to the possible perception that there was an increased dosage (due to increased number of tablets taken), and the resemblance of the new (smaller) tablets to birth control pills.

- The eight-week period of time recommended for using the 3-mg tablets once the 500 tablet bottle is opened presented logistical problems for communities directing their own treatment. It was noted that as a result wastage may increase compared to the 6-mg sachets.

- It was found that 500 tablets per bottle was too many. A recommendation for a reduction of the numbers of tablets per bottle has been passed on to Merck for repackaging consideration.

Summary of Ms. Wanjira Mathai's presentation (NGDO ad hoc subgroup on Mectizan® security and accountability): During the NGDO coalition meeting held in Haywards Heath (29-30 July 1998), there were discussions around issues relating to Mectizan® security and accountability. Such issues included central store security, what is an "acceptable loss," chain of responsibility, and Mectizan® inventory reporting. To further pursue these discussions, an ad hoc subgroup was formed. The sub-group decided that a team should visit Nigeria to better understand the current Mectizan® accountability practices; Ms. Wanjira Mathai, GRBP program officer, was part of this

team. The visit to Nigeria revealed the presence of a system which, with some modifications, could serve as a model for Mectizan® receipt and distribution in other countries.

Conclusions and Recommendations:

- A formal physical count of Mectizan® inventory at each level to ensure the timely detection of losses. The recommended procedures involve:
    - At the NOCP/NGDO level, counting cartons and boxes/bottles in unsealed cartons in the presence of the in-country consignee.
    - At the State level, officials counting boxes/bottles, and tablets in unsealed boxes/bottles in the presence of the in-country consignee.
    - At the LGA level, counting boxes/bottles, and tablets in unsealed bottles in the presence of a state member.
    - At the community level, counting bottles and loose tablets in the presence of an LGA member.

- A standardized inventory log to ensure that all pertinent information with respect to Mectizan® transactions are accurately accounted for and that ending inventory balances can be easily determined

- An increase in supervisory visits and spot checks of storage facilities at all levels to ensure adequate monitoring and to emphasize the importance of accountability.

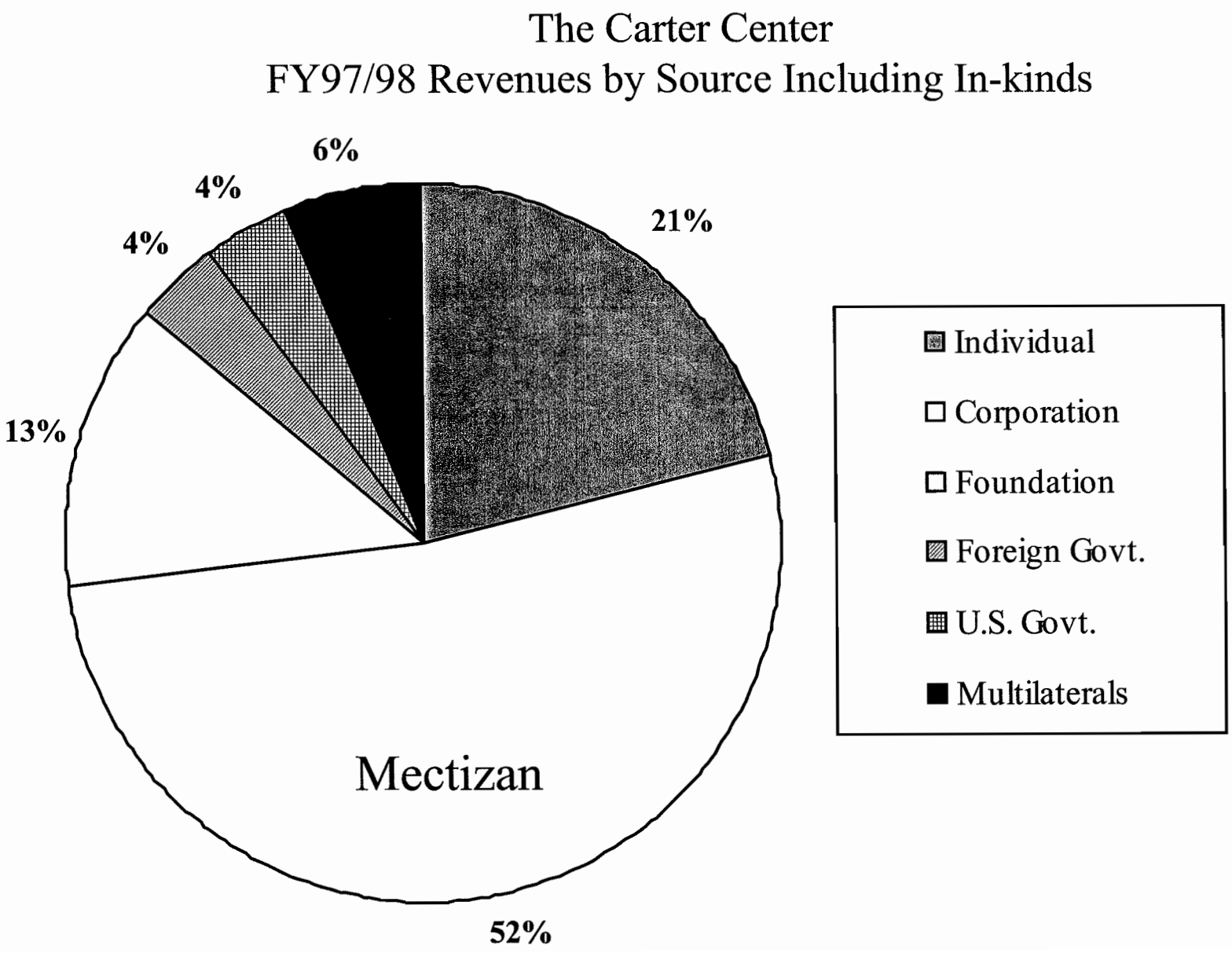
- Other observations by the team included the need to 1) establish a strategy to manage the transition from 6-mg tablet to 3-mg tablet, and 2) the endorsement of the practice of distributing the drug to CDDs during group training sessions.

Summary of Mr. Rick Robinson's presentation (Impact of the Mectizan® distribution on the finance and administration offices on GRBP): Currently, 52% of all Carter Center revenues are from corporate donations (Figure 20), and the bulk (>75%) of these corporate donations is made up of the monetary value of Mectizan® from Merck. Good management practices have resulted in the need to have a better idea of the current status of the inventory at any given point in time. A software tool for money management (Quicken®) was adapted to assist in managing Mectizan® data. It creates reports for analysis and permits monitoring of inventory levels and usage trends. However, as with any data manager, it must be maintained and kept current, and its validity depends on the timeliness and accuracy of data that goes in it.

Supporting documentation must exist at every point of tablet movement, from receipt in country to final use. In addition, the mechanism for "retirement" of the drug (treatment, damage, disposal for spoilage) must be recorded. Even if GRBP has released responsibility of the drug to the ministry of health at a certain point, GRBP feels responsible for having documentation and monitoring controls at each step. The form of the documentation varies from one country program to another, but all should have basic information such as quantities transferred, location of the transfer, signature, and date. Documentation should not only to reflect the movement of the

drug but also reflect the balances remaining. The hope is to have zero inventory at the end of each treatment year, but this is usually not the case. Another issue is that the remaining tablet balances may, in part, be in found in remote communities and essentially unrecoverable (or recoverable only at great cost/effort). It is urged that inventory balances distinguish between available (active) and unavailable tablets.

Figure 20


The Carter Center
FY97/98 Revenues by Source Including In-kinds
6%
4%
4%
21%
13%
Mectizan
52%
Individual
Corporation
Foundation
Foreign Govt.
U.S. Govt.
Multilaterals

ANNEX: 5 SUSTAINABLE MANAGEMENT TRAINING CENTER (SMTC) IN JOS, NIGERIA

The objective of SMTC in Jos, Nigeria, is to develop better management skills among public health practitioners with a focus on Guinea worm eradication and onchocerciasis control through Mectizan® delivery. Experts in international health management at Rollins School of Public Health of Emory University and CDC assist in the "training of trainers" who will teach project planning, problem solving, financial management, the use of data in decision making, logistics, and total quality management ("TQM") techniques. SMTC is coordinated by Dr. Abel Eigege and Ms. Ifeoma Umolu, with several other GRBP staff members function as staff members, along with staff from the FMOH and UNICEF.

In 1998, seven management training workshops and one reunion were held at the National office in Jos (four were held in 1997). A total of 119 managers were trained from 27 states and the Federal Capital Territory Abuja (69 in 1997). Overall, 210 participants have been trained at the Jos training center since its inception in 1996 from 33 Nigeria States, The Federal Capital Territory, and The Republic of Guinea (Map 6). Those trained included Federal, State, and Local MOH workers (78% of the trainees), and NGDO employees (15% of trainees) working in health and community development. Fields represented included: 1) general primary health care and disease control (16%), 2) onchocerciasis control (15%), 3) hospitals management (15%), and 4) finance and administration (10%). The majority (35%) of participants to the workshops in 1998 were sponsored by UNICEF/Nigeria through their Zonal Offices, 29% by NGDOs, 18% by State Governments, 15% by the Federal Government, and 2% by individuals.

As a means of encouraging decentralization and sustainability, the training program, SMTC, in collaboration with GRBP, facilitated four zonal workshops (Enugu, Owerri, Benin) and one zonal reunion in Owerri. These workshops resulted in the training of 222 managers at state and local government level in 1998 and a total of 432 managers have been trained since the SMTC began. These trainees represent all states in Nigeria except Bayelsa, Akwa Ibom, and Rivers, and state onchocerciasis coordinators have been trained from all hyper and meso endemic states of the Federation. The program has been recognized internationally, and Dr. Eigege and Mrs. Maduka (coordinator of one of the GRBP/Lions southeast projects) attended the International Conference of Clinical Epidemiology in Mexico to present an overview of the SMTC in Jos, and it's complementary role in the epidemiology and control of disease.

Map 6

Distribution of SMTC Trainees by State
(Jos-Based Workshops: August 1996 - March 1999

No. States Represented = 33
(Total States = 36 and FCT)

No. Trainees = 210
Nigeria - 208
Republic of Guinea = 2

ANNEX 6 *Loa loa* and Mectizan® (ivermectin)

Loiasis is endemic in the forested areas of west central Africa (parts of Benin, Nigeria, Cameroon, Gabon, Equatorial Guinea, Congo, CAR, Sudan, Uganda, and the former Zaire). Unlike onchocerciasis where the microfilariae (mf) are found in the skin and eyes, those of *Loa loa* are found in deep organs and the blood, and can occur in spectacular concentrations. Compared with the other major filariasis (*Onchocerca volvulus*, *Wuchereria bancrofti*, and *Brugia* species), *Loa loa* is not highly pathogenic. Classically associated *Loa loa* illnesses include a self-limited, localized dermal angioedematous swelling of wrists and ankles ("Calabar swellings") and occasional subconjunctival migration of a worm across the eye. A variety of associated signs and symptoms have been reported, including pruritus, arthralgia, fatigue, hypereosinophilia, endomyocardial fibrosis, nephrosis, retinopathy, lymphoedema/adenitis, and endocrinopathy, but the vast majority of infected persons have no recognizable illness.

The effectiveness of Mectizan® against *Loa loa* remains a subject of research, but it is unlikely that Mectizan® kills adult *Loa loa* parasites in humans at the dose range used for onchocerciasis (150-200 ug/kg). At this dose, however, Mectizan® reduces *Loa loa* microfilaremia to about 14% of its pretreatment level for up to one year after treatment.

CNS reactions ("encephalitis/encephalopathy") may rarely occur in persons with very high numbers of *Loa loa* mf (>10,000 mf per milliliter of blood) shortly after treatment with the microfilaricidal drug diethylcarbamazine (DEC). Current information suggests these reactions occur less commonly after ivermectin therapy, however the MDP requests that programs distributing ivermectin for onchocerciasis control programs have heightened surveillance for adverse reactions in areas where *Loa loa* is known to be endemic.

GRBP Cameroon Case of Severe Adverse Reaction

A previously healthy 36 year-old male died five days after being administered an appropriate dose of two six-mg Mectizan® tablets by Ministry of Health workers on December 10, 1998. This had been the patient's first exposure to Mectizan® . He was hospitalized on December 13 at a district hospital with a history of two days of fever, weakness, and alteration of consciousness. He had normal blood pressure and no indication of meningitis or CNS malaria. He was treated with IV fluids, diuretics, antimalarials, and steroids. He improved briefly, then lapsed into a deep coma and died on or around December 15. A blood test was reported to show infection with *Loa loa* and a skin snip showed infection with Onchocerca volvulus. There were no other lab tests or CSF examination. Dr. Eyamba, the Global 2000 country representative, working with the ministry of health nurse assigned to our project, filed the standard adverse reaction report to the MDP and the Director of Community Health, Cameroon. All were satisfied that everything was done appropriately and promptly to provide the best possible care, under the prevailing conditions, for this individual. Dr. Eyamba visited the hospital were the patient died with the Provincial Delegate for Health of West Province. The single blood slide (a thin smear) was available for examination, and found to contain just three *Loa loa* microfilaria (meaning the parasitemia was only 150-300 mf/ml 3-4 days post treatment). Malaria parasites were seen, but could not be quantified due to poor preparation of the slide. The hospital records and interview

with the physician in charge at the district hospital showed what was considered only "fair" management of this patient (no blood pressure monitoring, physical examinations were not thorough, limited laboratory support, rapid termination of IV and ampicillin therapy). The conclusion was that this patient could have had cerebral malaria, hypoglycemia (one blood sugar of 40 was noted), and/or meningitis (patient was not examined for menigismus, even though there were 3 cases and one death from meningitis in the hospital last week). The low parasitemia and a period of lucency during hospitalization were against this being a case of *Loa loa* encephalopathy.

ANNEX 7: THE GRBP NIGERIA LYMPHATIC FILARIASIS (LF) ELIMINATION AND URINARY SCHISTOSOMIASIS CONTROL INITIATIVES

Assessment of disease: In addition to *Onchocerca volvulus*, *Wuchereria bancrofti* is also known to occur in Plateau and Nasarawa States in Nigeria. In 1998, GRBP worked with the Federal Ministry of Health of Nigeria (FMOH) and local government health authorities to assess 821 persons for *W. bancrofti* infection in eight "pilot" villages in these states: four villages were located in Akwanga and Pankshin LGAs (treated for onchocerciasis with annual Mectizan® for six years), and four were located in Wase and Langtam South LGAs (which are not currently under Mectizan® treatment of onchocerciasis). All villages studied were found to have clinical and laboratory evidence of lymphatic filariasis. The most common and useful physical finding was hydrocele, found in 14% of males (range in communities 8%-26%); lymphedema was uncommon, occurring in about 1.2%. Of 623 participants tested by ELISA for filarial antigen, 26% had positive results. The two villages in Pankshin had seropositivity rates of over 30%, and those in Akwanga somewhat lower (14% in the village of Angwan Habu, and 28% in Gudi).

History of hydrocele and lymphedema/elephantiasis was used to rapidly assess 148 villages (56% of the 266 villages in Akwanga and Pankshin). Mobile teams visited these 148 villages and asked key informants the following "Yes/No" questions: 1) "Is scrotal swelling a problem in the village?" 2) "Is leg swelling a problem in the village?" 3) "Is bloody urine a problem in the village?" In both LGAs over 70% of respondents gave an affirmative answer for the question about presence of hydrocele, results for urinary schistosomiasis showed about 30% of villages provided a positive answer.

Given the expense of the serological ICT tests for *W. bancrofti* antigen (US $1 each) we have tried to limit our assessment activities using this tool. We chose to follow the model of 30 adult male rapid assessment procedure used in onchocerciasis in villages selected throughout the two LGAs. Preliminary results using that sampling procedure (Table 9) in 12 villages showed the mean ICT antigen positivity rate was 34% (range 13-40%). Similarly, a rapid assessment procedure for schistosomiasis in 14 villages, using 30 school children tested by dipstick for blood in urine, showed the mean positivity rate in the samples was 25% (range 0-80%) (Table 10).

Knowledge, Attitudes, and Practices (KAP) studies: A preliminary KAP survey among 68 village elders revealed that hydrocele and swollen extremities were not felt to be related to an infection, and a minority knew that avoiding mosquito bites or taking a medicine are options for prevention. In terms of schistosomiasis, it was found that all communities had broad knowledge of disease, but there was poor knowledge of the cause (women had most difficulty), and no clear idea of how to prevent the disease. Based on the results, in 1999 the project will work with social scientists to develop health education materials that are tailored to community needs and beliefs. It has been the general experience that ivermectin is perceived as beneficial, particularly as the more recognizable advantages of treatment were observed (loss of lice, scabies, and intestinal round worms). Given the popularity of ivermectin, we hope that community leaders will be enthusiastic about an expanded program that will treat lymphatic filariasis and urinary schistosomiasis.

Table 9
Rapid Assessment for LF: Summary Results of 12 Villages in Plateau and Nasarawa States

Village	LGA/STATE	# Examined	History +ve Hydrocele	Physical Exam Hydrocele +ve	Number +ve ICT	History +ve %	P. Exam % +ve	ICT % +ve
Kapil	Pankshin/Plateau	30	1	4	4	3.3	13.3	13.3
Jepmudyel	Pankshin/Plateau	30	4	5	12	13.3	16.7	40
Kpokuleng/Pyabor	Pankshin/Plateau	30	6	5	7	20	16.7	23.3
Mungkohot	Pankshin/Plateau	30	14	12	14	46.7	40.0	46.7
		30	4	3	8	13.3	10.0	26.7
K/Tagwaye (Sarki)	Akwanga/Nasarawa	30	4	7	12	13.3	23.3	40
K/Tagwaye (Makar)	Akwanga/Nasarawa	30	5	8	9	16.7	26.7	30
Buku Sarki	Akwanga/Nasarawa	30	4	4	12	13.3	13.3	40
Buku Madaki	Akwanga/Nasarawa	30	4	9	8	13.3	30.0	26.7
Kambre	Akwanga/Nasarawa	30	2	3	9	6.7	10.0	30
Gbunchu	Akwanga/Nasarawa	30	4	6	15	13.3	20.0	50
Gwanje (Sarki)	Akwanga/Nasarawa	30	5	10	13	16.7	33.3	43.3
Total		360	57	76	123	15.8	21.1	34.2