



# Eye of the Eagle



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## Trachoma Review Plans for Elimination by 2020

The 13th annual Trachoma Program Review took place at The Carter Center Feb. 27–29, 2012. Representatives from ministries of health and The Carter Center in Mali, Niger, Nigeria, South Sudan, Sudan, and Ethiopia participated along with representatives from 15 partner and donor organizations.

Under the theme of “Shaping Programs to Fit the Need: The Relevance of Prevalence,” presentations focused not only on achievements from 2011, but also laid

out implementation plans from each country for each component of the SAFE strategy to meet its elimination targets. The SAFE strategy refers to surgery, antibiotics, facial cleanliness, and environmental improvement. In addition, countries involved with the Quality Assurance for Trichiasis Surgery study—Mali, Niger, and Ethiopia—presented key findings and recommendations from the study that will be implemented to improve surgical performance, access, and quality.

The review was organized by SAFE

component. The first day centered on surgery, during which Dr. Paul Courtright from the Kilimanjaro Centre for Community Ophthalmology (KCCO) presented a summary and conclusions from the joint World Health Organization (WHO)/KCCO Global Trichiasis Scientific Meeting in January 2012. Conclusions include the following: Surgical service must be tailored to patient needs and to clinical conditions in the context of each country; surgical outcomes

*continues on page 2*

### What’s Inside

SAFE Helps Reduce Parasites . . . . .	3
MalTra Sees High Turnout . . . . .	3
Director Receives Trachoma Medal . . .	4
Mali and Niger on Track to Elimination . . . . .	5
Uganda Notes Progress in Disease Fight . . . . .	8
Malaria Review Reveals Improvements in Net Use . . . . .	9
Study Shows Progress by Nigerian LF Program . . . . .	11
LF, Malaria Collaboration Needed . . .	11
Kruse Receives Award . . . . .	12
Lions Visit President Carter . . . . .	12

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Waging Peace. Fighting Disease. Building Hope.

## Interruption of River Blindness to Halt 1.2 Million Treatments

The Carter Center assisted in a total of 14,355,547 onchocerciasis (river blindness) treatments in 2011, as reported at the 16th annual River Blindness Program Review held in Atlanta, Ga., Feb. 21–23.

Assisted treatments in the 11 countries in 2011 reached 97 percent of the targeted, treatment-eligible population and were made possible by a grassroots network of community-directed ivermectin distributors (CDDs). Nearly 170,000 CDDs were trained in 2011, managed by over 33,000 trained community supervisors and ministry of health district

personnel. Lions Clubs are special partners of the River Blindness Program in several countries.

Between 1996 and 2011, the program assisted ministries of health in the cumulative distribution of more than 157 million ivermectin tablets (Mectizan®, donated by Merck) in mass drug administration programs, together with health education, to either control or eliminate onchocerciasis (see Figure 6). The annual review is convened to assess program performance and impact, discuss achievements and challenges, and share research projects. In Nigeria, the Carter Center’s River Blindness Program is integrated with

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# Trachoma

## Trachoma Review

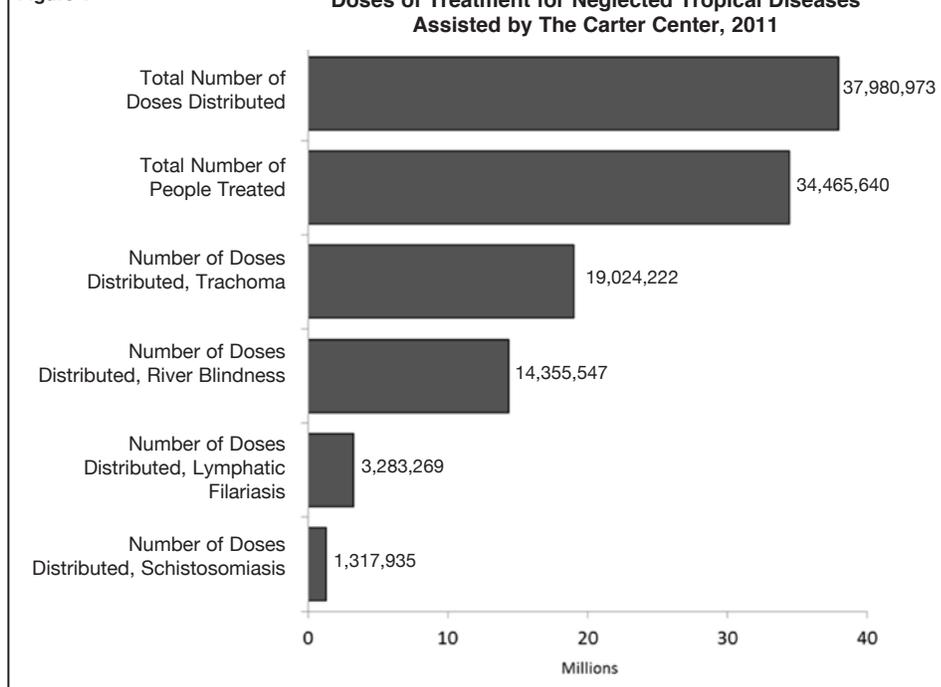
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could be improved through six-month postsurgical assessments; current levels of productivity will not eliminate the known trichomatous trichiasis (TT) backlog by 2020; and all patients should be offered a trichiasis management proposal, including those who refuse surgery. Following the discussion of the WHO/KCCO meeting, Dr. Matthew Burton of the London School of Hygiene and Tropical Medicine addressed patient barriers to accessing surgical services, which most commonly include cost of surgery, lack of transportation to surgical site, time constraints, and lack of accompaniment.

The second day of the review focused on mass distribution of antibiotics and on updates from partner organizations. Presentations ranged from best practices in mass drug administration, an evaluation of height-based dosing in Ethiopia, and adverse events after mass distribution of azithromycin. On the same day, three students from the Georgia Institute of Technology presented an Android-based platform that they are designing for use in surveys, including the experience of piloting this platform during prevalence surveys in South Gondar, Ethiopia, in summer 2011. The students are refining the platform based on this experience, and the final product will be adaptable to future survey needs. Use of the tablets will eliminate the need for double entry of data, decrease data cleaning time, significantly decrease the potential for operator error, and allow for preliminary results in a few days, rather than weeks.

On the third day, presenters discussed the F and E components,

Figure 1



impact surveys, and the role of laboratory testing in trachoma control. Emily Toubali of Helen Keller International presented results from a radio impact survey in Mali on radio listening habits, broadcast coverage, and community knowledge and behavior surrounding trachoma. Dr. Robin Bailey from the London School of Hygiene and Tropical Medicine discussed the role of laboratory testing in trachoma control, results from the Gambia Partnership for the Rapid Elimination of Trachoma study, and the cost-effectiveness of treatment with mass drug administration versus testing for chlamydial infections. Finally, Jonathan King of The Carter Center presented preliminary results on soil-transmitted helminth infections in South Gondar and discussed potential impacts of the SAFE strategy on these infections.

Presenters discussed new evaluations that show the impact of the programs' planning and that confirm interventions are working (see Figure 1).

The promise of new technologies, along with new recommendations, indicate great potential for the national programs to make solid strides in meeting their elimination targets.

## Essential Trachoma Article

In April 2012, the considerable progress in the global program to control trachoma was reported in the World Health Organization's *Weekly Epidemiological Record*. The paper can be freely accessed on the Internet and should be considered essential reading for everyone who supports the goal of GET 2020.

World Health Organization. Global WHO Alliance for the Elimination of Blinding Trachoma by 2020: Progress report on elimination of trachoma, 2010. *Wkly Epidemiol Rec* 2012; 87:161–168. Retrieved from <http://www.who.int/wer/2012/wer8717/en/index.html>.

# Trachoma

## Eighth MalTra Week Sees High Turnout in Ethiopia

Preliminary reports suggest that more than 90 percent of the more than 6 million people targeted for antibiotic distribution to combat trachoma were reached during the most recent MalTra (malaria and trachoma) week in Ethiopia. In addition, the regional health bureau provided sufficient rapid diagnostic tests for all presenting fever cases and treatment for those positive for malaria.

The eighth biannual MalTra week was conducted in the five mountainous zones that comprise East Amhara, Ethiopia, from April 28 through May 5.

For most districts, this was the fourth annual distribution of azithromycin for trachoma control and fever testing and treatment for malaria, and the process is now well understood by the villagers and the health workers coordinating the distribution teams.

Participation in the villages was active and orderly with very high turnout. Supervisors reported that there were fewer fever cases presenting than in previous years and that fewer of these were positive for malaria, adding support to anecdotal evidence that malaria is declining in East Amhara.

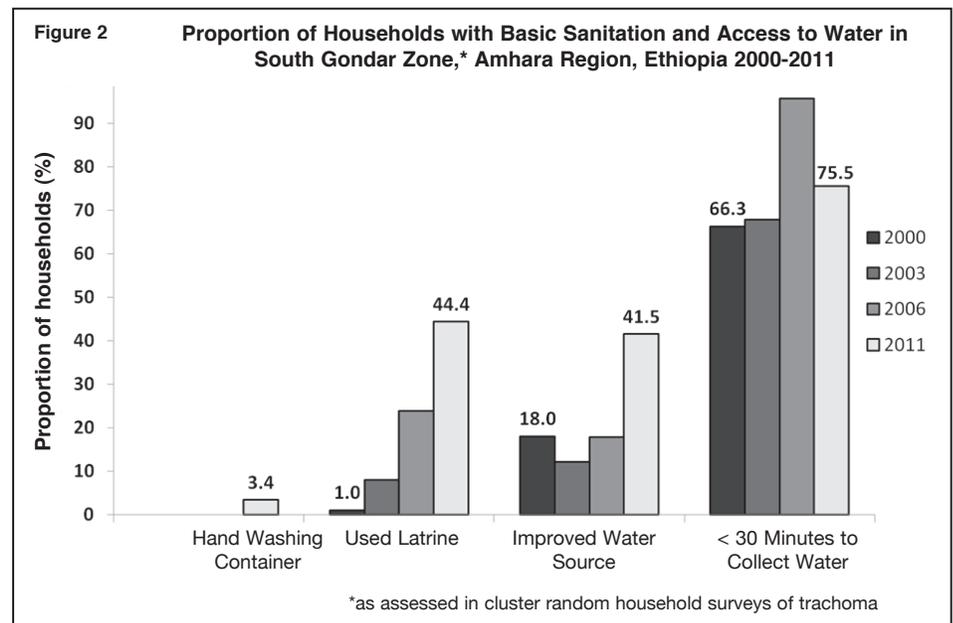


Regional coordinator *Mulat Zerihun* (center) and supervisor *Izentine Ali* (right) descend a precipitous mountain path while supporting distribution teams in *Dawa Chefa woreda*.

## SAFE Strategy Helps Reduce Intestinal Parasites

A 2011 investigation shows that after five years of implementation of the SAFE strategy for trachoma control, the prevalence of intestinal parasites in children ages 2–15 years has decreased in 10 woredas (districts) of South Gondar, Ethiopia. Distribution of albendazole also may have played a role in the decline. In addition, the frequency of protozoan infections warrants an investigation of water quality.

A total of 2,338 stool specimens were collected from randomly selected children in 99 communities. (All selected children were offered deworming treatment regardless of participation.) The specimens were processed and linked to survey data from a total of 2,657 children (88 percent response). The mean age of children providing specimens was 6.8 years (SD 3.6), and 46.8 percent of the specimens were from boys. The zonal-level prevalence of roundworm



(*Ascaris*), hookworm, whip worm (*Trichuris*), and any of these three infections was 10.6 percent, 9.8 percent, 2.5 percent, and 20.1 percent, respectively.

The prevalence of intestinal schistosomiasis was 2.0 percent, but the

proportion of children infected with schistosomiasis by community ranged from 0–52.4 percent. Intense helminth infections ( $\geq 100$  eggs per gram) were observed for roundworm only (16.4 percent of infections) and no other

*continues page 4*

# Trachoma

## SAFE

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helminth infection. The prevalence of infection with any protozoan was 78.1 percent, and 23.0 percent of children had *Giardia* cysts in their stool.

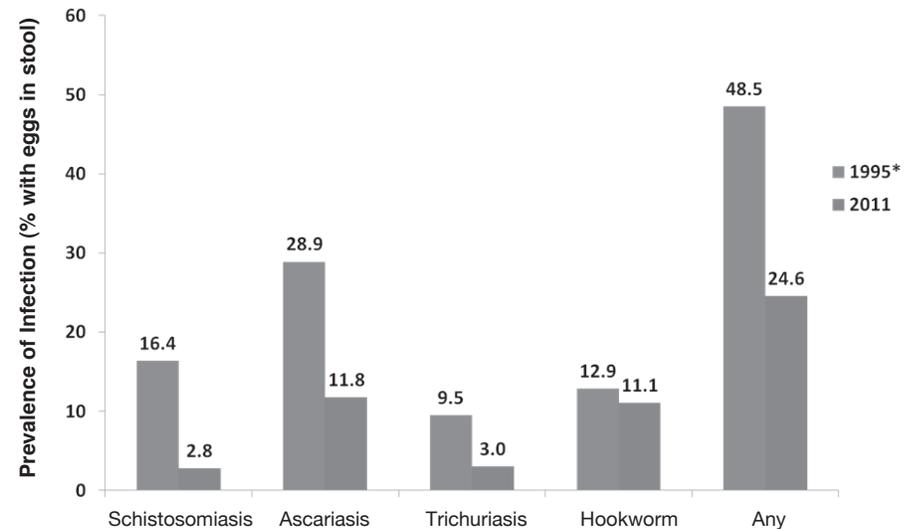
Figure 2 shows the improvements in household-level sanitation and water access that have occurred in South Gondar zone since 2000 prior to any SAFE interventions. SAFE interventions were piloted in a few areas until 2003, and by 2006 the implementation of SAFE activities was at scale in all woredas within the zone. Cumulatively, 339,913 household latrines have been constructed, increasing household ownership from 1 percent to 44.4 percent.

Prevalence of worm infections has reduced significantly since a previous survey in 1995 (see Figure 3). While the proportion of children infected with hookworm was not significantly lower than in 1995, none of the current infections were intense. *Ascaris* and *trichuris* are transmitted through the fecal-oral pathway, which is affected by the presence of hygiene and sanitation, whereas hookworm is transmitted percutaneously through the feet. In rural Ethiopia, children are often barefoot, making them more susceptible to this type of infection. A total of 945,991 doses of mebendazole or albendazole were distributed within the zone to preschool-age children in 2005–2011, yet the proportion of this target population that reported taking this medicine was 33.0 percent (24.4–41.5 percent).

Improvements in sanitation and perhaps recent albendazole distribution among preschool-age children have played a role in the observed decline in intestinal helminthiasis. In addition to continued promotion of hygiene and

Figure 3

Prevalence of Helminth Infections Among School-Age Children in South Gondar Zone, Amhara Region, Ethiopia 1995 and 2011



\* Jemaneh L (2000). The epidemiology of schistosomiasis mansoni and soil-transmitted helminths in elementary school children from the South Gondar Zone of the Amhara National Regional State, Ethiopia. *Ethiop Med J* 2000 Apr;38(2):105-18.

household-level sanitation through the SAFE strategy, expansion of the current deworming program to school-age children should be considered according to guidelines of the World Health Organization. The frequency of protozoan infections suggests poor water quality or unsanitary water collection and storage practices, calling for further study.

The Carter Center assists the Amhara National Regional State Health Bureau to eliminate blinding trachoma through the implementation of the SAFE strategy (surgery, antibiotics, facial cleanliness, and environmental improvement). The

aim of the F component is to reduce contamination of fingers, flies, and fomites by keeping faces free of infectious discharge. The promotion of facial hygiene involves face and hand washing to prevent transmission of *C. trachomatis*, which also prevents transmission of other infections spread by contact with infectious material. The E component aims to improve access to water and sanitation and encourages water use for hygiene purposes. The combined effects of the F and E aspects of SAFE should have an indirect benefit on intestinal parasites, respiratory tract infections, and diarrheal diseases.

## Director Receives Trachoma Medal

Dr. Paul Emerson of The Carter Center was awarded the prestigious Trachoma Gold Medal in April at the French Ophthalmological Society meeting in Paris. The medal was presented by Gabriel Coscas, president of the International

Organization Against Trachoma and the French League Against Trachoma. Supported by Novartis, the award was given in recognition of Dr. Emerson's exceptional contributions toward the elimination of blinding trachoma.

# Trachoma

## Mali and Niger on Track to Achieve Elimination by 2015

Recent prevalence surveys in Mali and Niger, assisted by The Carter Center, show a dramatic reduction in active trachoma (TF) across both countries. Of the 85 districts identified in 1997–1998 as having a prevalence of TF greater than 30 percent, 43 (51.1 percent) are now estimated to be below the elimination goal of 5 percent prevalence. Of the remaining 42 districts, only six remain above 30 percent. (See Figures 4 and 5.)

Both countries undertook intensive trachoma prevalence surveys from 1997–1998 to map the levels of intensity for TF. At the conclusion, 16 of 17 regions had been surveyed (constituting 85 of the 88 districts), and all demonstrated a 30 percent or greater prevalence of TF. The international standard for elimination of the disease is a prevalence of less than 5 percent.

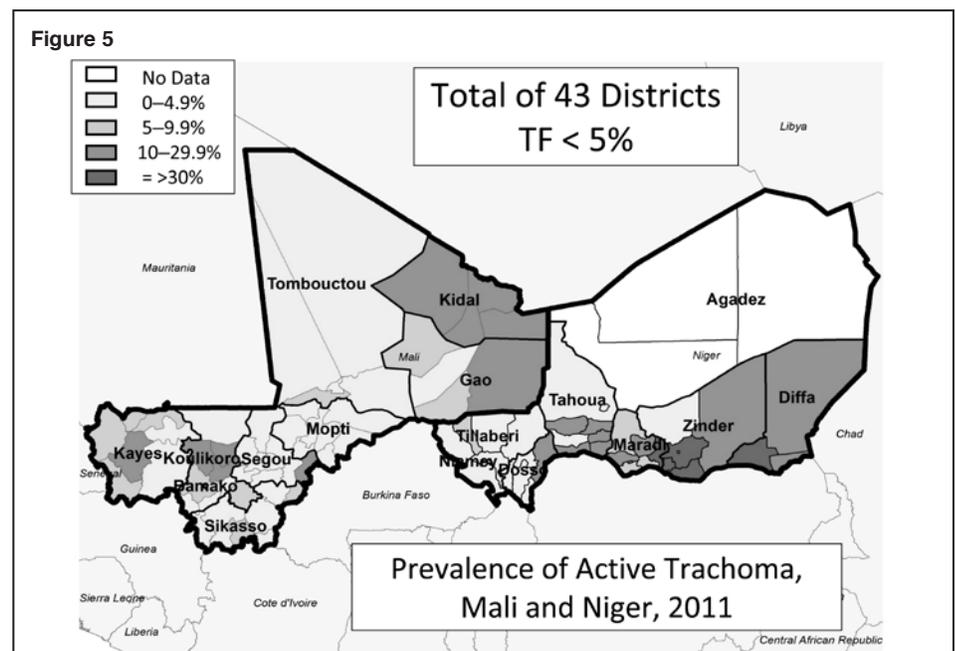
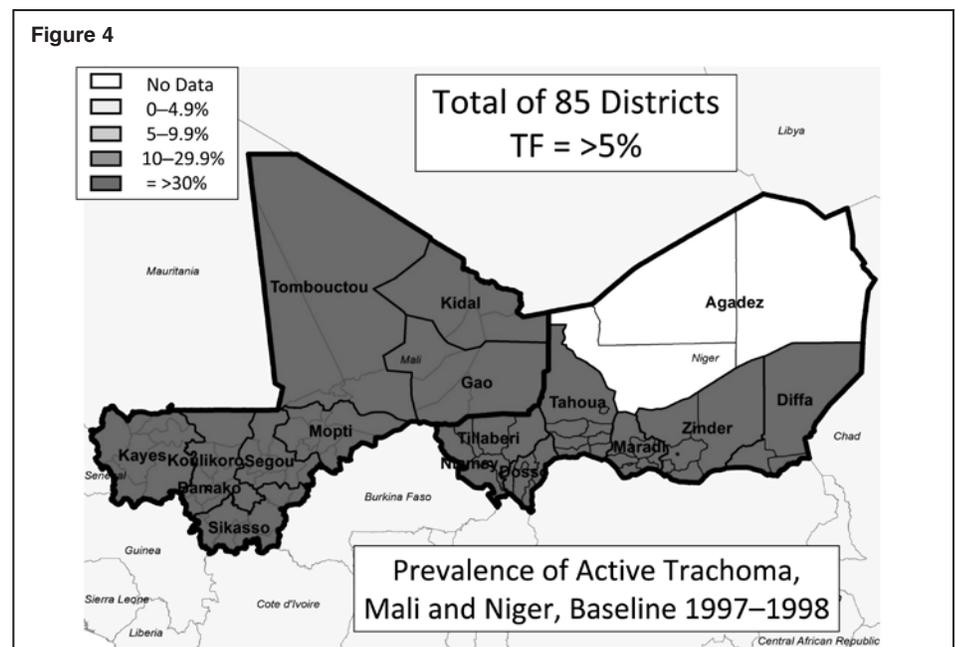
Over the next 10 years, Mali and Niger implemented various interventions to reduce TF and address the estimated high load of trichiasis (most advanced stage of trachoma) cases. By 2008, with the support of The Carter Center, Helen Keller International, USAID, and other agencies, both countries embarked on national-level implementation of the full SAFE strategy (surgery, antibiotics, facial cleanliness, and environmental improvement).

Since then, The Carter Center has made strong contributions to the national effort. Along with assisting each country in developing plans of action to reach their elimination goals, the Center has assisted in a total of 35,673 trichiasis surgeries, supported distribution of more than 4.3 million

doses of antibiotics (azithromycin and tetracycline eye ointment), trained 24,758 people to conduct health education at the community level, and supported construction of 152,530 household latrines.

While the March 21 coup d'état in Mali has caused considerable

challenges to its national trachoma program, field activities are continuing. The Center remains steadfast in supporting the programs of both countries. Should the high level of national commitment and collaboration continue, the goal of eliminating blinding trachoma by 2015 can be reached.



# River Blindness

## Interruption of River Blindness

*continued from page 1*

lymphatic filariasis and schistosomiasis efforts, and review of those two programs was a key component of the meeting.

The River Blindness Program has long been interested in onchocerciasis elimination (where treatments can end because parasite transmission has been interrupted). Elimination efforts are based on more intensive use of Mectizan, with twice- or even four-times-per-year treatments, and, in Uganda, vector control. Elimination goals have been set for all six countries in the Americas (Brazil, Colombia, Ecuador, Guatemala, Mexico, and Venezuela), Uganda, and the Abu Hamad focus in Sudan.

Treatment plans for 2012 were particularly exciting as great progress in four programs—Mexico, Guatemala,

Sudan, Uganda—in interrupting river blindness transmission will result in a decrease by 1,235,018 treatments in 2012. To our knowledge, this is the largest decrease ever reported in the history of the onchocerciasis global initiative.

Carter Center staff were joined by ministry of health officials from Cameroon, Ethiopia, Nigeria, Sudan, Uganda; and representatives of the African Program for Onchocerciasis Control, Centers for Disease Control and Prevention, Children Without Worms, Emory University, GlaxoSmithKline, U.K. Department for International Development, Global Network for Neglected Tropical Diseases, Lions Clubs of Ethiopia, the Mectizan Donation Program, MITOSATH, Ohio University, RTI, Sightsavers International, Task Force for Global Health, University of South

Florida, and Yakubu Gowon Center. Dr. Frank Richards, director of the Carter Center's lymphatic filariasis, malaria, river blindness, and schistosomiasis programs, chaired the meeting.

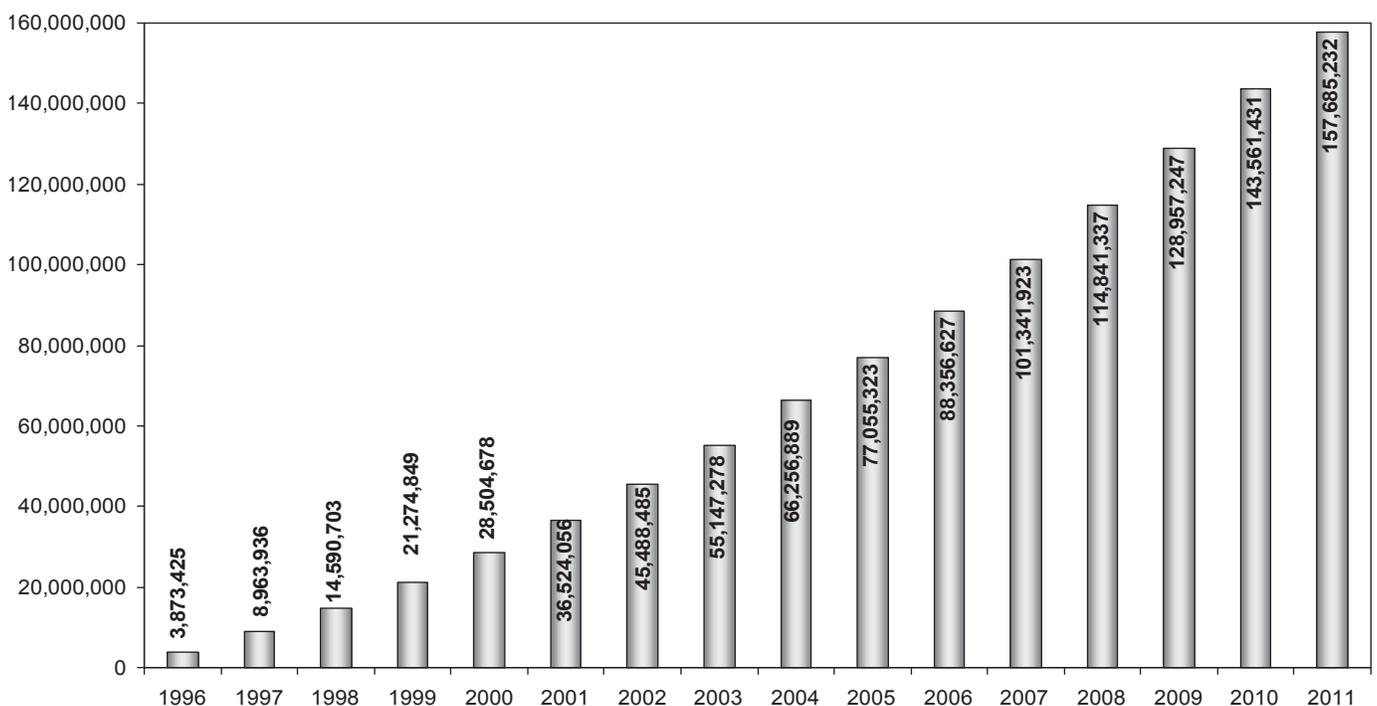
## Nigeria

More than 5.5 million Mectizan mass treatments for river blindness were distributed in Nigeria in 2011 by the Ministry of Health with assistance from The Carter Center. Nigeria trained or retrained more than 53,000 CDDs to accomplish the distribution.

The Carter Center's Lymphatic Filariasis (LF) Elimination Program is integrated with the River Blindness Program in Plateau and Nasarawa states, combining Mectizan treatments with albendazole; the Center assisted in 3.2 million combined treatments. Due to more than eight years of mass drug distribution as well as recent mass distribution of long-lasting insecticidal

Figure 6

Cumulative Mectizan Treatments Delivered by Carter Center–Assisted River Blindness Programs, 1996–2011



# River Blindness

nets throughout two states, the Center believes that LF transmission has been stopped, and, therefore, LF treatments can cease in some of these local government areas. Treatments have already stopped in five areas. Because LF is transmitted by *Anopheles sp.* mosquitoes, the national effort to distribute nets for malaria will have a major impact on LF transmission also (see other articles in this issue for more details).

In 2011, Carter Center–assisted praziquantel treatments for schistosomiasis exceeded 1.3 million in the four assisted states of Delta, Edo, Nasarawa, and Plateau. The Izumi Foundation supports this program in Edo and Delta, and the majority of the praziquantel used in Nigeria is donated to The Carter Center through the World Health Organization by Merck KGaA of Germany.

## Ethiopia

The Carter Center onchocerciasis efforts in Ethiopia are based on a long-standing partnership with the Ministry of Health, Lions Clubs, and the Lions Clubs International Foundation SightFirst Program. In 2011, 3,208,581 people were treated with Mectizan by more than 40,000 CDDs. Thanks to GlaxoSmithKline support, combined Mectizan and albendazole treatments were provided for the third year for LF elimination in onchocerciasis-endemic areas of Gambella region. The LF Ethiopia program assisted in 84,929 combined treatments in 2011, 97 percent of the ultimate treatment goal, or UTG.

## Cameroon

In 2011 the Lions-Carter Center initiative assisted in 1,379,706 Mectizan treatments in West province. The

Carter Center announced at the review that its office in Cameroon will close in August 2012. The staff there are to be congratulated on their accomplishments, especially country representative Dr. Albert Eyamba, who has worked with the Center since 1998, and accountant Jean Marie Noubibou and secretary Miriam Tayou, who have worked with the program since its launch in 1996 and before that with the River Blindness Foundation program that launched in 1993.

## Uganda

Under a national policy of onchocerciasis elimination, the Lions-Carter Center initiative assisted Uganda in administering more than 2.5 million Mectizan treatments in 2011, provided by more than 57,000 CDDs. At its fourth meeting in August 2011, the Ugandan Onchocerciasis Elimination Executive Advisory Committee recommended treatments be halted in several foci in Uganda where transmission has been interrupted. However, the River Blindness Program and its partners are preparing for a major expansion of the treatment program into the recently pacified northern and northwestern parts of Uganda, where severe disease and high levels of transmission persist. Over 1.5 million new treatments are anticipated this year.

## Sudan

The Sudan Lions-Carter Center effort in support of the Ministry of Health program based in Khartoum reported 450,623 treatments, administered by 3,610 CDDs. At the review, reports on negative serological and entomological studies in the Abu Hamad focus were shared, along with the announcement that the Ministry of Health had determined that onchocerciasis transmission



*A commemorative pin was distributed at the meeting, celebrating over 150 million cumulative Mectizan treatments delivered by Carter Center–assisted river blindness programs from 1996–2011. Design by Sherri Richards.*

has been interrupted in Abu Hamad and planned to stop treatment in this focus in 2012.

## The Americas

The Carter Center's Onchocerciasis Elimination Program for the Americas (OEPA) coalition includes the ministries of health of the six endemic countries, Lions Clubs and Lions Clubs International Foundation, Gates Foundation, the Pan American Health Organization (PAHO)/WHO, Merck and its Mectizan Donation Program, the Centers for Disease Control and Prevention, and the U.S. Agency for International Development (USAID). A total of 722,188 Mectizan treatments were given in the Americas in 2011.

Of 13 endemic foci in six countries, six foci have now passed successfully through three years of post-treatment surveillance (PTS). Four foci are no longer providing Mectizan treatment but are still under PTS. The newest additions to this list are Central

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# River Blindness

## Interruption of River Blindness

*continued from page 7*

focus of Guatemala and South Chiapas focus in Mexico, which stopped mass treatment activities at the end of last year. These are the two largest foci in the Americas, and halting treatment there will result in a 68 percent drop in treatments in the region in 2012. Colombia completed its national PTS activities in 2011 and became the first country to request certification of elimination from PAHO/WHO. Ecuador will complete its third year of PTS this year.

Only three American foci still need mass treatments for onchocerciasis in 2012: Northeast Venezuela, South Venezuela, and Amazonas, Brazil. The total population of these three foci is 103,977, but some communities will offer four treatments per year. The Amazonas focus and South Venezuela focus are contiguous and lie on the



Marcos Wesley/Pro-Yanomami Commission

*A Yanomami community structure, called a shabano, stands in the remote Amazon forest along the Brazil-Venezuela border.*

Brazil-Venezuela border. The indigenous Yanomami people who live there migrate through dense Amazon jungle and frequently cross the border. Thus, these two foci must be treated as a single epidemiological unit.

The Carter Center is pleased to announce a cooperative agreement grant from the CDC for OEPA. With funds from USAID, this grant from

CDC will allow the Carter Center's OEPA program to continue its work of interrupting transmission of the disease in the remaining foci and preparing for certification of elimination in the six endemic countries in the region. Financial support from USAID through the CDC complements the many years of invaluable technical partnership that CDC has provided to OEPA.

## Uganda Notes Its Progress in Fight Against River Blindness

The Uganda Ministry of Health issued a press release, which appeared in the Kampala newspaper *New Vision* on Feb. 17, announcing key achievements since Uganda's policy of elimination of onchocerciasis was adopted in 2007. The Uganda strategy is to provide treatment twice per year and to undertake vector control to stop river blindness transmission by 2020.

Of note, the release highlights progress in halting mass ivermectin treatments for river blindness in Itwara, Wadalai, and Mount Elgon foci:

The disease affects a total population of about 3,287,696 people in Uganda. Interruption of transmission

has been attained in a total population of 445,534 people that is 13.6% of the population. Over 450,000 people in Uganda have been rid of this debilitating disease. This implies that this year (2012) about 793,220 treatments will not be provided, thus saving a lot of resources for the elimination program to invest in other river blindness foci.

The Ministry of Health acknowledged key partners in the effort, including The Carter Center, SightSavers, the Mectizan Donation Program, the World Health Organization, and the African Program for Onchocerciasis Control.

The Carter Center assists Ugandan district-level onchocerciasis programs;

assessment activities, including laboratory monitoring; and the Uganda Onchocerciasis Elimination Expert Advisory Committee, which makes recommendations to the Ministry of Health after careful review of required data to satisfy national onchocerciasis elimination guidelines, which are based on World Health Organization criteria.

Despite the success of Uganda's elimination policy to date, the country continues to face challenges. Severe river blindness recently has been mapped in areas of northern Uganda. President Yoweri Museveni launched semiannual treatments in the northern areas in late May to coincide with a measles campaign.

## Malaria Review Reveals Improvements in Net Use

At its program review meeting held in February, the Carter Center's Malaria Control Program celebrated the achievement of 10 million bed nets distributed with support from the Center since 2004.

Participants joined staff from The Carter Center and the Ethiopia and Nigeria ministries of health to discuss the successes and challenges of the malaria control programs assisted by The Carter Center in 2011, and to recommend concrete actions and measurable objectives for 2012.

Dr. Larry Slutsker of the Centers for Disease Control and Prevention (CDC) and Dr. Rick Steketee of the Malaria Control and Evaluation Partnership in Africa (MACEPA) outlined the criteria, challenges, and potential strategies for achieving malaria elimination.

Among those present for the

program review were Gen. Dr. Yakubu Gowon, former head of state of Nigeria. The Bill & Melinda Gates Foundation, MACEPA, CDC, Emory University, the Institute for Global Health of Barcelona, Vestergaard-Frandsen, Chevron, Council of State and Territorial Epidemiologists, the Saudi Fund for Development, Sightsavers, and the Task Force for Global Health were also represented.

### Nigeria

Adamu Sallau, malaria coordinator for the Nigeria office, reported on activities in Nigeria. In early 2011, 2.3 million long-lasting insecticidal nets (LLINs) were distributed in Enugu and Ebonyi states, bringing the



*A lapel pin designed by Sherri Richards commemorates 10 million bed nets distributed with support from The Carter Center.*

total number of nets distributed in Nigeria with Carter Center's assistance to nearly 4.3 million. To encourage the consistent and appropriate use and care of bed nets where they have been distributed, The Carter Center in Nigeria assisted the Ebonyi state Roll Back Malaria team with the design and implementation of a

community-based behavior-change communications strategy. Community volunteers visited households monthly to assess current net ownership, use, and care and to conduct tailored behavior-change activities. Net needs identified during home visits informed planning for a mop-up campaign.

Additional behavior-change activities included net hanging demonstrations, drama performances, and net washing and mending days. After six months of intervention, 100 percent of households owned at least one LLIN, 95 percent of LLINs were observed to be hanging, 98 percent of LLINs were used the previous night, and 97 percent of people reported sleeping under a net the previous night (see Figure 7).

Sallau also presented results from surveys conducted in Plateau and Abia states, which showed the highest malaria prevalence among children 5–14 years of age, a group not traditionally targeted for intervention.

Net ownership prior to the mass distribution campaigns was 7.2 percent in Abia and 35.1 percent in Plateau. A separate coverage survey conducted by The Carter Center in

*continues on page 10*

### *In Memoriam*

## José Raymundo Hernández

1955–2012

An onchocerciasis warrior in the Americas, José Raymundo Hernández passed away on Jan. 1. In 1975, Hernández began his career as a field worker for the Mexican Onchocerciasis Program. In 1995, he became the coordinator of the Onchocerciasis Program in Huixtla, Chiapas. He was a beloved friend and collaborator of the Carter Center's Onchocerciasis Elimination Program for the Americas since the beginning of the program.

His longtime wish for the South Chiapas focus to interrupt onchocerciasis transmission was accomplished in 2011.

OEPA will miss Hernández's hands-on approach, integrity, hard work, and dedication to the cause, all of which were a major contribution to the success of the Mexican program.

*Editor's Note: Special thanks to Dr. Mauricio Sauerbrey, director of OEPA, for providing the content for this article.*

## Malaria Review

*continued from page 9*

Plateau state in January 2011 indicated that 82 percent of households owned at least one net after the campaign. Data were also presented from a study conducted in Southeast Nigeria on the effects on both lymphatic filariasis and malaria transmission using just insecticide-treated nets without mass drug administration. The study demonstrated that transmission of lymphatic filariasis can be interrupted by LLINs alone.

## Ethiopia

Solomon Kibret summarized Carter Center–assisted malaria control activities in Ethiopia that provided support to the federal Ministry of Health and the regional health bureaus for malaria control in Amhara, Oromia, Gambella, and Beneshangul-Gumuz regions; and the Southern Nations, Nationalities, and People’s Region.

Routine household LLIN assessments conducted in 2011 indicate that net ownership remains high throughout Carter Center–assisted regions—more

than 92 percent in all regions except Oromia (see Table 1). Results revealed, however, substantial gaps in LLIN use and care. In response, Carter Center staff members in Ethiopia and regional health bureaus are considering ways to apply successful lessons from Nigeria in Ethiopia.

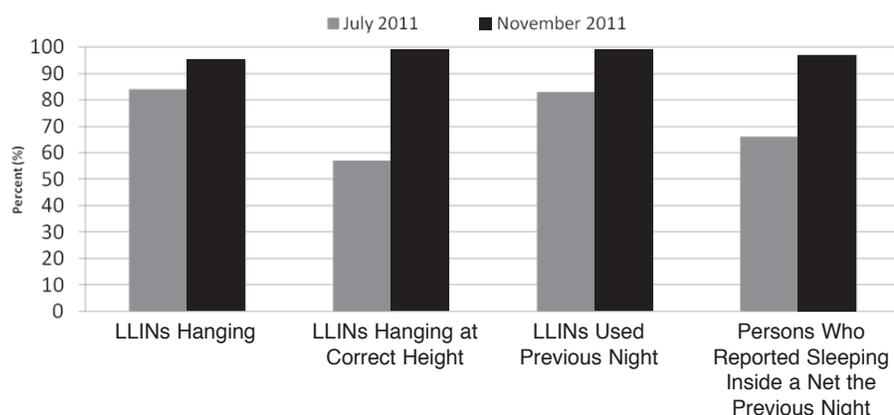
Through a program of “supportive supervision,” 662 health facilities were visited throughout the five Carter Center–assisted regions to ensure adequate supply of malaria diagnostic and treatment commodities, and to promote timely reporting and use of malaria surveillance data. Together with training for MalTra (malaria, trachoma) week campaigns (described below), an estimated 7,801 health workers received malaria training in 2011.

A total of 48,715 cases of malaria were treated last year through MalTra weeks VI (East Amhara, May 2011) and VII (West Amhara, November 2011).

The Carter Center also provided support for Ethiopia’s 2011 malaria indicator survey. The survey targeted some 11,025 households, making it the largest malaria indicator survey conducted in any country to date.

Dr. Gregory Noland presented a new malaria surveillance tool that was developed in partnership with the Amhara Regional Health Bureau to help monitor malaria data at the district level. Using weekly data reported by each district health office, this Excel-based system provides a central “dashboard” page to display visual trends in reporting, malaria testing, total cases, incidence, and other relevant indicators in a customizable layout. Dr. Noland will continue to work with Ethiopia staff to refine the system and promote its use.

**Figure 7** Changes in Hanging and Use of Long-Lasting Insecticidal Nets in Areas of Southeast Nigeria Six Months After Introduction of Behavior-Change Communications Strategy



Note: LLINs = Long-lasting insecticidal nets

**Table 1** Results of Routine Household Long-Lasting Insecticidal Net Assessments in Districts Assisted by the Carter Center’s Malaria Program in Five Regions of Ethiopia, 2011

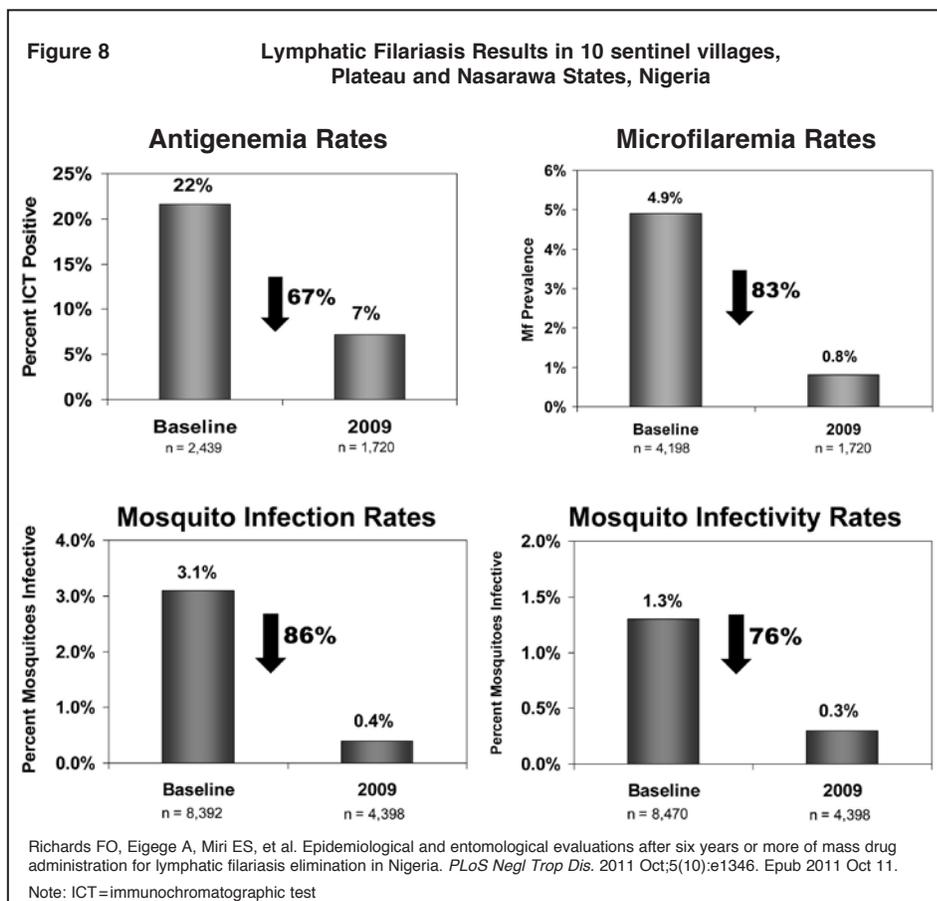
Region (number of households visited in Carter Center–assisted districts in 2011)	Percent Households Owning at Least 1 LLIN	Percent Households Where All Members Slept Under LLIN the Previous Night	Percent Households Where Some or All Nets Have Unmended Holes
Amhara (n=5,665)	92%	35%	62%
SNNPR (n=533)	96%	45%	19%
Oromia (n=477)	74%	34%	38%
Gambella (n=207)	96%	50%	40%
Beneshangul-Gumuz (n=136)	94%	60%	91%

Notes: LLIN = Long-lasting insecticidal nets; SNNPR = Southern Nations, Nationalities, and People’s Region

## Study Shows Progress by Nigerian LF Program

Lymphatic filariasis (LF) is a leading cause of permanent and long-term disability worldwide resulting in lymphadema, hydrocele, and elephantiasis. The current strategy for interrupting transmission of the disease is annual treatment with ivermectin and albendazole for at least six years. In Plateau and Nasarawa states in Nigeria, treatment has been ongoing since 2000.

To determine impact on transmission, three parameters (i.e., microfilaremia, antigenemia, and mosquito infection) were monitored over time in 10 sentinel villages. After 7–10 years of mass drug administration (see Figure 8), antigenemia decreased by 67 percent over the treatment period, microfilaremia by 83 percent, mosquito infection rate (all larval stages) by 86 percent, and mosquito infectivity rate (L3 stages) by 76 percent. Preliminary results suggested that LF transmission had been interrupted.



## Collaboration of LF, Malaria Efforts Needed

A meeting in Abuja, Nigeria, March 27–28, explored possible co-implementation of malaria and lymphatic filariasis programming. Convened by Nigeria’s Ministry of Health and cosponsored by The Carter Center, the meeting focused on identifying areas of programmatic synergy and promoting active collaboration to improve efficiency and increase impact. More than 158 million Nigerians are at risk of contracting malaria, and 104 million people are at risk for LF infection.

The burden of disease from malaria

and lymphatic filariasis (LF) is greater in Nigeria than any other African country. The common link between the two diseases is the *Anopheles* mosquito, which in Nigeria is the vector for both parasites. The Carter Center’s Nigeria program presented findings from research supported by the Bill & Melinda Gates Foundation, which showed that LLINs distributed for malaria control also can stop LF transmission, with or without mass drug administration.

Meeting participants noted how LF medicines were effective also

against intestinal helminths that cause anemia, the reduction of which is a goal of the national malaria program. Collaboration between the two programs could help with net distribution, scale-up of drug treatment, reduction of anemia, improvement of monitoring and evaluation, replacement of used LLINs, and encouragement of community-based behavior change needed for proper LLIN use. Over 200 people attended the meeting, including federal and state ministry personnel, The Carter Center, donor organizations, and others.

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# Global Health News

## Kruse Receives Award of Distinction

**N**icole B. Kruse, chief development officer for the Carter Center's health programs, received the Award of Distinction from Emory University in March. The Carter Center is affiliated with the university, which celebrates its most exceptional faculty and staff with these annual awards.

Kruse's dedication to the Carter Center's health programs over the past 10 years was recognized, especially her extraordinary efforts raising funds for the Guinea Worm Eradication Program last year and in 2010.

## Lions Leaders Visit President Carter

*On April 30, a delegation of international Lions Clubs leaders visited former U.S. President Carter in Plains, Ga. First row (left to right): Lions Clubs International President Dr. Wing-Kun Tam, President Carter, Immediate Past International President Sid L. Scruggs III. Second row (left to right): Anne Palmer, International Second Vice President Barry J. Palmer, Linda Madden, International First Vice President Wayne Madden. Third row (left to right): Lions Clubs International Executive Director Peter Lynch, Sharon Dillard, Past International President Jim Ervin.*



Nicole Kruse