



# Eye of the Eagle



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THE CARTER CENTER

July 2009

## African Leaders Honor Center's Work

Health officials from 11 African countries have recognized former U.S. President Jimmy Carter and The Carter Center for their "pioneering contributions to eradicating neglected tropical diseases in Africa." The leadership award was presented to Carter Center officials Dr. John Hardman, president and CEO, and Dr. Donald Hopkins, vice president of health programs, on April 22 in a Washington, D.C., event sponsored by Global Health Progress and ONE.

"President Carter is a true leader and friend to the African nations," said Dr. Sam Zaramba, Uganda's director general of health services, speaking on behalf of the delegation. "The partnership of his Carter Center with our governments and communities has ended the suffering many of our people experienced from the debilitating effects of Guinea worm."

This is the second award given by the delegation, which was in Washington to discuss Africa's health concerns with U.S. officials and is composed of senior health officials from Uganda, Botswana, Ghana, Kenya, Lesotho, Malawi, Mali, Namibia, Niger, Nigeria, and Tanzania, as well as

representatives from the African Union.

"The Carter Center is not the main ingredient," Dr. Hopkins said, describing it, rather, as a "catalyst" working with African ministries of health and community groups on the ground.



Global Health Progress

Accepting an award from 11 African nations, Dr. Donald Hopkins (right), the Carter Center's vice president of health programs, and Dr. John Hardman (center), Carter Center CEO, thank Dr. Sam Zaramba, director general of health services from the Uganda Ministry of Health.

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THE CARTER CENTER



Waging Peace. Fighting Disease. Building Hope.

## Trachoma Review Highlights Progress in Six Countries

The 10th annual review of Carter Center-assisted trachoma control programs took place Feb. 11–13, 2009, at The Carter Center in Atlanta. More than 70 people participated, representing the seven Carter Center-assisted programs in six countries and the programs' major partners, the Conrad N. Hilton Foundation, the Bill &

Melinda Gates Foundation, the Arthur M. Blank Foundation, Pfizer Inc, the International Trachoma Initiative, the Lions Clubs of Ethiopia, and Lions Clubs International Foundation.

Country program presentations focused on this year's theme, "From Control to Elimination." In addition to annual activity data, national

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# Trachoma

## Program Review

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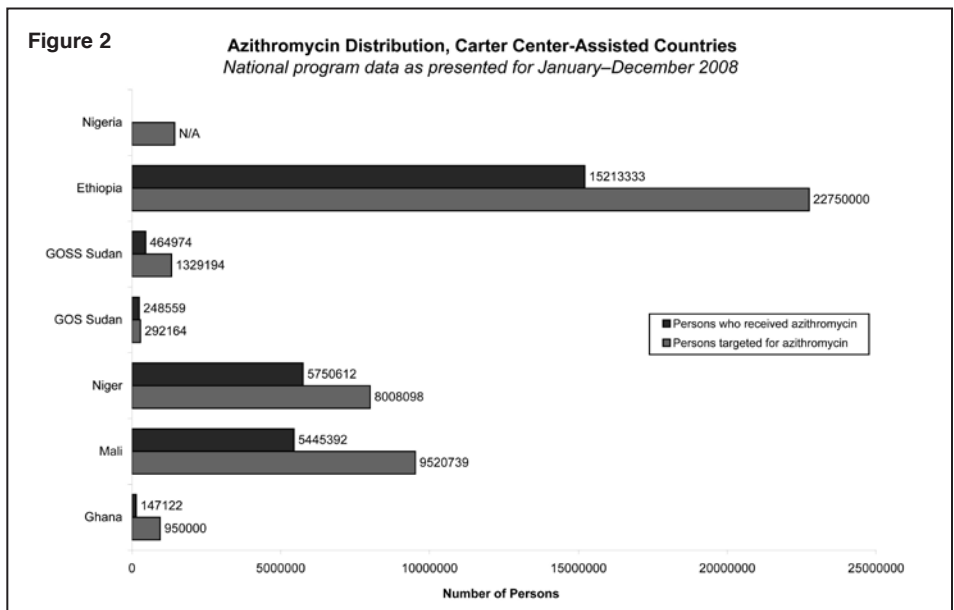
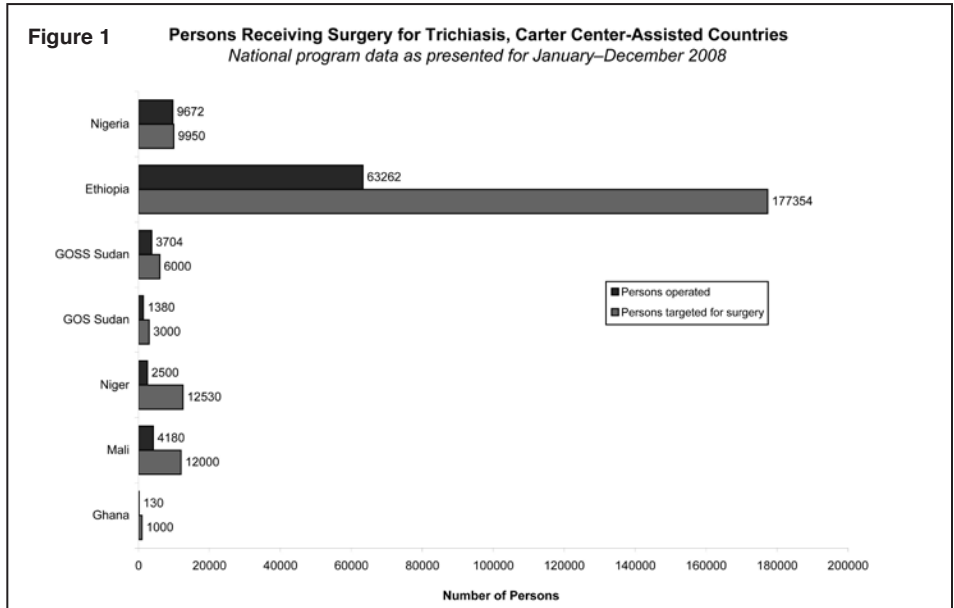
program coordinators presented ultimate intervention targets and annual objectives necessary to meet the elimination of blinding trachoma. An overview of the strategic planning process from Mali and Niger was presented to demonstrate the steps required to move toward developing a national elimination program. The Ghana national Trachoma Control Program shared findings from its recent impact evaluation, showcasing the success of the first sub-Saharan African country to eliminate trachoma as a public health problem nationwide.



*Dr. Awad Hassan presents the Government of Sudan's 2008 trachoma control program accomplishments.*

The special sessions included several expert presentations on trachoma grading and clinical diagnosis, management of trichiasis, women and trachoma, and the collateral benefits of the SAFE strategy. Highlights from the review meeting included presentations on the Carter Center Malaria Control Program and the accomplishments of the 2008 Maltra week in Ethiopia.

Country statistics reported at the meeting included the following (also see Figures 1–4):



### Ghana

- Prevalence was reduced to below the World Health Organization intervention thresholds
- 1,808 household latrines were constructed
- 130 persons received trichiasis surgery

### Ethiopia

- 63,262 persons received trichiasis surgery
- 15,213,333 persons received azithromycin
- 384,274 household latrines were constructed

### Mali

- 13,410 household

latrines were constructed

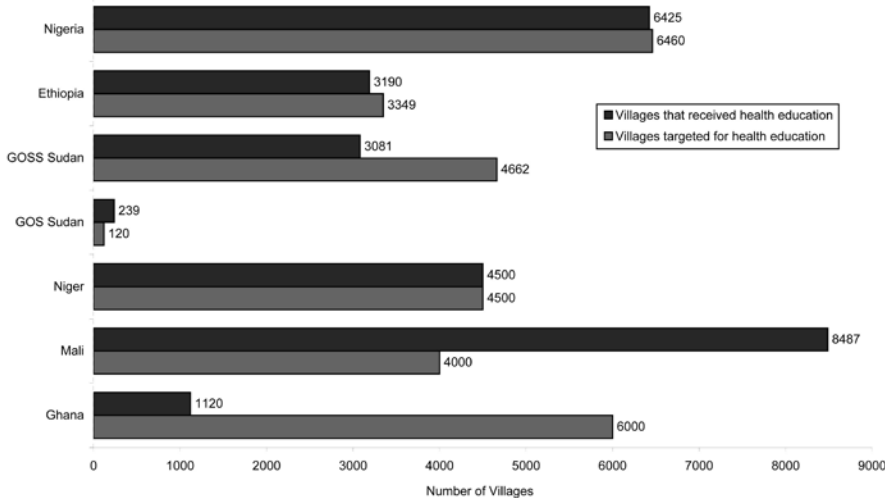
- 8,487 villages received ongoing health education
- 5,445,392 persons received azithromycin

### Niger

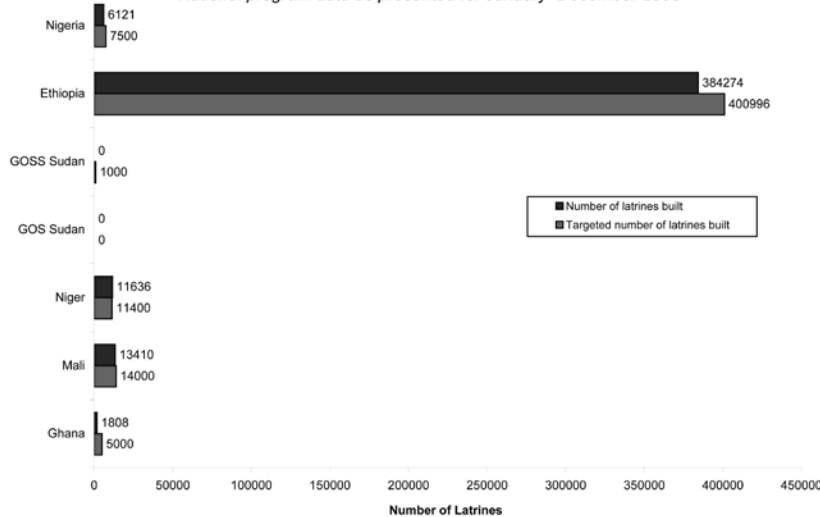
- 11,636 household latrines were constructed

# Trachoma

**Figure 3**  
**Villages Receiving Health Education for Trachoma, Carter Center-Assisted Countries**  
*National program data as presented for January–December 2008*



**Figure 4**  
**Household Latrines Built, Carter Center-Assisted Countries**  
*National program data as presented for January–December 2008*



- 2,500 persons received trichiasis surgery
- 5,750,612 persons received azithromycin

## Nigeria

- 6,121 household latrines were constructed
- 6,425 villages received ongoing health education

- 9,672 persons received trichiasis surgery

## Government of Sudan

- 248,559 persons received azithromycin
- 1,380 persons received trichiasis surgery
- 239 villages received ongoing health education

## Government of Southern Sudan

- 3,704 persons received trichiasis surgery
- 3,081 villages received health education
- 464,974 persons received azithromycin

National trachoma control programs were represented at the program review by Dr. Oscar Debrah, Ghana; Dr. Kadri Boubacar, Niger; Dr. Bamani Sanoussi, Mali; Dr. Kamal Hashim and Dr. Awad Hassan, Government of Sudan; Dr. Lucia Kur, Government of Southern Sudan; Dr. Uwaezuoke Onyebuchi, Nigeria; and Dr. Daddi Jima, Ethiopia.

Partner organizations represented at the review included the Centers for Disease Control and Prevention, the F.I. Proctor Foundation, Helen Keller International, the International Trachoma Initiative, the Kilimanjaro Centre for Community Ophthalmology, the London School of Hygiene and Tropical Medicine, Johns Hopkins University, Operation Eyesight, Research Triangle International, Sight Savers International, the Task Force for Child Survival and Development, World Vision International, and Vestergaard Frandsen.

Participating Carter Center resident technical advisers and trachoma control program officers included Jim Niquette, Ghana; Mohamed Salissou Kane and Ali Amadou, Niger; Jim Ting and Yaya Kamissoko, Mali; Dr. Nabil Aziz and Zeinab Abdalla, Government of Sudan; Gideon Gatpan, Government of Southern Sudan; Teshome Gebre, Dr. Zerihun Tadesse, Tesfaye Teferi and Mulat Zerihun, Ethiopia; and Dr. Emmanuel Miri, Dr. Abel Eigege, and Dr. Nimzing Jip, Nigeria.

# Trachoma

## Azithromycin Distributed in Niger's Zinder Region

In February 2009, The Carter Center supported mass distribution of azithromycin for trachoma control in two endemic districts of Zinder region in Niger. Azithromycin (Zithromax®) is provided for trachoma-endemic countries by Pfizer Inc through the International Trachoma Initiative. This distribution was part of the Carter Center's expansion of assistance to surgical and antibiotic activities in Niger and Mali, made possible with support from the Conrad N. Hilton Foundation.

The distribution focused on two health districts, Zinder commune and Mirriah (estimated population 600,000). After residents received an annual dose of antibiotic for three consecutive years, 2004 to 2006, the districts had been resurveyed and were found to still have rates of follicular trachoma (TF) greater than

10 percent in children ages 1 to 9 years. Following World Health Organization implementation guidelines, any district with a prevalence of TF greater than 5 percent after an initial round of three years of mass antibiotic distribution

requires an additional round of three years of drug distribution. The antibiotic campaign was accompanied by distribution of tetracycline eye ointment for children younger than 6 months of age.



J. King

*Standing with a friend, a Malian boy holds a bottle of azithromycin.*

## New International Trachoma Initiative Moves to Atlanta

On April 1, 2009, a new International Trachoma Initiative (ITI) based at the Task Force for Global Health (previously the Task Force for Child Survival and Development) was added to the programs supported and served by the task force. Dr. Danny Haddad was named director for ITI, and all operations shifted from New York to Decatur, Ga., just two miles from

Carter Center headquarters in Atlanta. The Task Force for Global Health also houses the Mectizan® Donation Program (the Merck donation program for river blindness control), Children Without Worms (the Johnson & Johnson mebendazole donation program), and the albendazole donation program (the GlaxoSmithKline donation program for the elimination of lymphatic filariasis), in addition to the

ITI donation program. The addition of ITI makes the task force the home for four programs committed to the treatment and prevention of an array of neglected tropical diseases.

Dr. Haddad is well-known by many trachoma control program coordinators, having worked for Helen Keller International in Niger and Tanzania and, most recently, as regional scientific adviser for HKI based in Dakar, Senegal. Dr. Haddad and other task force representatives have participated in the last three Carter Center tra-

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## Trachoma Survey Training Reaches Programs in Mali, Burkina Faso

Due to the change in prevalence survey methodology recommended by the World Health Organization (WHO), current prevalence estimates in Mali require updating from the original surveys conducted in 1996 and 1997. The Carter Center will support trachoma prevalence surveys in 24 districts in Mali identified by the national program for 2009: all districts in the regions of Segou (eight districts), Mopti (eight districts), and Kayes (seven districts), plus baseline prevalence surveys in Kidal, which were recently conducted. Results from these surveys will provide up-to-date data to guide the national program in planning for interventions. The surveys will allow accurate estimates of backlogs of patients requiring trachomatous trichiasis (TT) surgeries and help the program determine which districts qualify for mass antibiotic distribution and improvements in sanitation and hygiene.

Part of the Carter Center's support to the national program included training on the current WHO trachoma prevalence survey methodology in collaboration with Research Triangle Institute's (RTI's) Neglected Tropical Diseases Initiative. Dr. Dieudonne Sankara, RTI technical director for neglected tropical diseases (NTDs), and Jonathan King, Carter Center trachoma control epidemiologist, co-led this training. Malian participants included 10 trachoma examiners, 14 recorders (two medical assistants and 12 medical students), the NTD coordinator for Helen Keller International, and senior staff of the National Prevention of Blindness program. In addition to the Malian participants, RTI supported five participants from Burkina Faso. The training was enhanced by the rich experiences of each national program, led by Dr. Sanoussi Bamani, the national blindness prevention coordinator

of Mali, and Dr. Bernadette Yoda, national blindness prevention coordinator of Burkina Faso. The training represents a collaboration among The Carter Center, RTI, and HKI to help tackle trachoma in West Africa.

Attendees participated in two days of classroom discussion and group exercises covering recommended sampling methods, household interviews, survey form completion, and, most importantly, use of the WHO simplified trachoma grading system to identify clinical signs of trachoma. The classroom exercises were followed by two days of practical training in the field. Four villages were selected for applied exercises in sampling, interviewing, completing forms, and eye examination. The technical participants' capacity to use the WHO simplified trachoma grading system was measured through an in-class and practical exam. Participants who achieved an agreement with the reference ophthalmologist of above 80 percent for WHO grade follicular trachoma (TF) were recommended to serve as examiners in upcoming surveys.

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choma control program reviews and have worked on many collaborations with The Carter Center in trachoma, onchocerciasis, and lymphatic filariasis control. The Carter Center currently assists the distribution of Pfizer-donated Zithromax® in Ethiopia, Niger, and Sudan. In 2008, The Carter Center supported treatment for 13.3 million people, totaling 37 percent of all Zithromax treatments distributed that year, making the Center ITI's largest single partner.

During the participatory planning meetings for the move to the task force, senior representatives from Pfizer reaffirmed with the Center Pfizer's commitment to the shared objective of global elimination of blinding trachoma by the year 2020. The shipments of Pfizer-donated azithromycin scheduled for 2009 are guaranteed, and joint forecasting is underway to ensure an uninterrupted and predictable supply of donated azithromycin to 2014 and beyond. The Carter Center is pleased to be able to support the task force in

the process of forecasting and setting up standard operating procedures for drug management and stewardship of this valuable donation.

The Carter Center health programs look forward to continuing collaboration with the Task Force for Global Health to provide world-class support to ministries of health in their trachoma control and elimination efforts, as well as in their mission to build partnerships focused on the elimination of these diseases around the world.

# River Blindness

## River Blindness Program Review Examines Progress in 11 Countries

The River Blindness Program hosted its 13th annual review on Feb. 16–18, 2009, at Carter Center headquarters in Atlanta. The meeting focused on the achievements, challenges, and research results of Carter Center-assisted onchocerciasis control and elimination programs in five African countries (Cameroon, Ethiopia, Nigeria, Sudan, Uganda) and six Latin American countries (Brazil, Colombia, Ecuador, Guatemala, Mexico, Venezuela). The review also addressed other diseases and public health initiatives with which The Carter Center integrates river blindness efforts: lymphatic filariasis, malaria, schistosomiasis, trachoma, and vitamin A supplementation. Integration of programs and services has become increasingly attractive as a way to maximize resources and provide needed services to communities.

In addition to Carter Center staff, the meeting included representatives from ministries of health of Cameroon, Ethiopia, Nigeria, Sudan, and Uganda; Merck and the Mectizan® Donation Program; the Bill & Melinda Gates Foundation; Lions Clubs International Foundation; Ethiopia Lions Clubs; GlaxoSmithKline; Emory University; Centers for Disease Control and Prevention; the African Program for Onchocerciasis Control; partner nongovernmental development organizations; University of South Florida; Universidad del Valle de Guatemala; Bernhard Nocht Institute for Tropical Medicine; Clarke Mosquito Control; Vestergaard

Frandsen; Izumi Foundation; and the World Health Organization. Dr. Frank Richards, who serves as director of the Carter Center's malaria, onchocerciasis, lymphatic filariasis, and schistosomiasis programs, chaired the meeting.

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### Integration of programs and services has become increasingly attractive.

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In 2008, The Carter Center assisted in 13,499,414 ivermectin (Mectizan, donated by Merck & Co., Inc.) treatments in 11 countries, reaching 98 percent of the 2008 eligible population, which is the ultimate treatment goal (UTG). This was an increase of 4 percent from 2007 treatments and the largest number ever for the Center's program (see Figure 5). In areas where the goal is onchocerciasis control (characterized by annual Mectizan treatments with the goal of preventing eye disease), about 11.3 million treatments were given in 2008. In areas where complete elimination of the disease is the goal (twice per year treatment to interrupt transmission), 2.2 million treatments were given. Elimination goals are currently the target for the Abu Hamad focus in northern Sudan, six foci in Uganda, and all six countries in the Americas where the disease is or was endemic. More than 198,000 community-directed ivermectin distributors working at the grassroots, community level were trained during the year to accomplish the 13.5 million treatments.

Country statistics reported at the meeting included the following:

### Nigeria

In 2008, more than 5.2 million Mectizan treatments for river blindness were assisted by the River Blindness Program in Nigeria (100 percent UTG). In Plateau and Nasarawa states, the River Blindness Program is integrated with the Lymphatic Filariasis (LF) Elimination Program, with funding from the Bill & Melinda Gates Foundation and GlaxoSmithKline, and Mectizan treatments for river blindness were combined with albendazole to interrupt LF transmission. The program assisted in a total of 3.7 million combined treatments. The two Nigerian states also increased schistosomiasis treatments by more than fivefold as compared to 2007 treatments, thanks to a generous donation of praziquantel to the World Health Organization by Merck KGaA (E. Merck), Germany (see page 11). In addition, 207,187 long-lasting insecticidal nets (LLINs) were distributed in Carter Center-assisted areas. The vast majority of these (200,000) were purchased with support by the Gates Foundation and distributed with assistance by the Center's malaria team in limited areas of Imo and Ebonyi states. Finally, 95,440 vitamin A supplements to young children were provided in Plateau and Nasarawa (see page 10). Nigeria trained (or retrained) 59,788 ivermectin distributors.

### Ethiopia

The Lions–Carter Center partnership operates in eight of the 10 endemic zones in Ethiopia. This program assisted in treating 2,983,055 persons, representing 95 percent of the 2008 UTG, a 3 percent increase over 2007. The Carter Center malaria program, which provided LLINs in 2007 throughout

# River Blindness

the River Blindness Program-assisted areas, continued integrated health education and monitoring efforts with the River Blindness Program in 2008. Community-directed distributors of ivermectin were trained to ensure that LLINs distributed in 2007 were being used and properly maintained; 31,589 distributors were trained in 2008. In 2009, thanks to new funding from GlaxoSmithKline, Ethiopia plans to distribute albendazole to more than 75,000 persons in tandem with Mectizan, to target LF elimination in parts of Gambella region.

## Cameroon

A total of 1,639,710 persons in North and West provinces received Lions–Carter Center-assisted mass Mectizan treatments in 2008, 92 percent of the UTG. The River Blindness Program also assisted in half a million vitamin A treatments in the two provinces, integrated with the system of community-directed treatment with ivermectin. In Cameroon, 35,242 distributors were trained.

## Uganda

The Uganda River Blindness Program exceeded 2 million treatments in one year for the first time in 2008, assisting in 835,687 Mectizan treatments in control areas and 1,286,940 treatments in elimination areas. The Uganda program achieved 96 percent of its treatment targets. Distribution of vitamin A, integrated with Mectizan treatment, provided 59,259 supplements to young children. During 2008, Uganda's program trained 70,357 community-directed distributors. Uganda also launched its Uganda Onchocerciasis Elimination Committee (UOEC), which met in August 2008, and two of its members—professor Rolf Garms of

Bernhard Nocht Institute for Tropical Medicine and Dr. Tom Unnasch of the University of South Florida—gave presentations at the review. Uganda was recognized for its leadership in onchocerciasis elimination (see APOC page 8).

## Sudan

In 2008, the Lions–Carter Center effort based in Khartoum reported 78,637 treatments in control areas and 163,738 treatments in the elimination focus of Abu Hamad, reaching 93 percent of its targeted treatments. Sudan trained 1,447 community-directed distributors. Sudan also held its first national program review meeting on onchocerciasis in 2008.

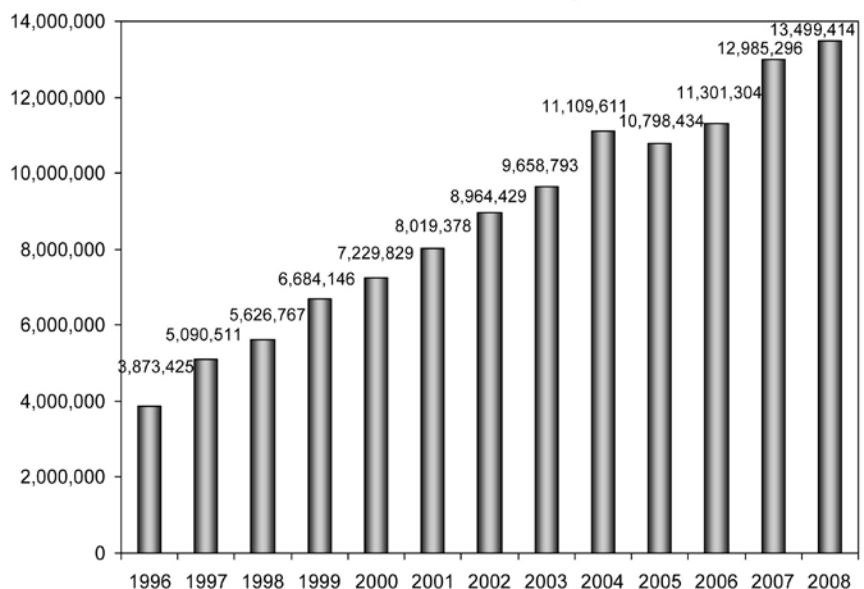
## The Americas

The Onchocerciasis Elimination Program for the Americas assists all six endemic Latin American countries with the goal of eliminating river blindness from the Western Hemisphere. In nine endemic foci,

736,983 treatments were given, which was 93 percent of the goal. Treatment goals and actual treatments decreased in 2008 as more foci halt Mectizan distribution once transmission is believed to be interrupted. The Santa Rosa focus of Guatemala was first to stop Mectizan treatment, followed in 2008 by Lopez de Micay (Colombia), Escuintla (Guatemala), Northern Chiapas (Mexico), and the Rio Santiago subfocus (Ecuador). In 2009, Huehuetenango (Guatemala) and Oaxaca (Mexico) will follow suit. A newly accepted resolution (CD48R12) by the Pan-American Health Organization set the goal of halting transmission (and subsequently, treatment) in all foci by 2012. But the work is far from finished. A three-year observation period follows the cessation of treatment in each focus prior to declaration that elimination has been achieved and a request for certification by the World Health Organization.

Figure 5

### Carter Center-Assisted Programs: Annual Mectizan® Treatments, 1996–2008



# River Blindness

## APOC Notes Feasibility of Elimination in Africa

The governing body of the African Programme for Onchocerciasis Control (APOC) has affirmed that activities should be shifted in many parts of Africa to support elimination of river blindness, rather than just control of the disease. The group, the Joint Action Forum (JAF), met Dec. 8–11, 2008, in Kampala, Uganda.

The president of Uganda, Yoweri Museveni, opened the meeting, highlighting Uganda's success in public health, including the elimination of Guinea worm disease and the role The Carter Center played in the campaign. As Uganda has intensified efforts to eliminate river blindness, President

Museveni remarked that the country has both the political will and technical expertise to accomplish its goal, not only with river blindness but also with elimination of lymphatic filariasis and other neglected tropical diseases. He also acknowledged Merck & Co., Inc. for its donation of Mectizan®.

Dr. Stephen Malinga, chair of the JAF meeting and Uganda minister of health, noted that Uganda was a leader in shifting from onchocerciasis control (with annual treatment with ivermectin) to elimination (through semiannual treatment with ivermectin, plus application of larvicide for the vector). Uganda has kept annual treatment coverage at more than 70 percent

of total population, higher than the World Health Organization target of 65 percent, for more than 10 years without eliminating the disease and thus risks recrudescence if annual distribution of ivermectin is halted.

Other countries also could benefit from a goal of elimination, according to Dr. Uche Amazigo, APOC director. She said that there was now scientific evidence from Mali and Senegal that mass treatment with Mectizan alone could result in the elimination of transmission of river blindness and urged African governments to increase the level of their financial contributions to their national programs so that a new

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## Noor Dubai Grant to Benefit Ethiopia, Uganda

The Lions Clubs International Foundation (LCIF) recently received a large grant from Noor Dubai, a new charitable initiative, to support Mectizan® distribution activities in several countries. The Carter Center, which has long been a partner with LCIF and local Lions in river blindness control and elimination programs, will receive a subgrant from LCIF and Noor Dubai to assist the ministry of health programs in Ethiopia and Uganda in 2009.

Founded in September 2008 by Sheikh Mohammed bin Rashid Al Maktoum, vice president and prime minister of the United Arab Emirates, Noor Dubai is dedicated to the prevention and treatment of blindness and low vision.

With Lions–Carter Center-assisted

Ethiopia and Uganda river blindness programs expected to deliver about 5.1 million treatments by the end of this year, the new support will strengthen and promote Lions Clubs in Ethiopia and Uganda.

Since 1996, LCIF has been collaborating with The Carter Center to fight river blindness (onchocerciasis) and provide hope to those at risk of

contracting the disease. The foundation is the charitable arm of Lions Clubs International, the world's largest service club organization, with 1.3 million members and clubs in 205 countries. The partnership with The Carter Center is part of the foundation's mission to preserve sight through surgery, eye hospitals, health care training, and advocacy.

M. Katabarwa



*Philip Albano from the Lions Clubs International Foundation (back right) meets with Lions of Uganda to discuss new funding from Noor Dubai.*





# River Blindness

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goal of elimination might be achieved.

JAF noted that the shift in APOC from a goal of control to a goal of elimination called for a clearer definition of elimination. In response, APOC, with the support of the Mectizan Donation Program and the Bill & Melinda Gates Foundation, held an informal consultation in February to define elimination goals in Africa; Dr. Frank Richards, director of the Carter Center River Blindness Program, participated. JAF attendees suggested that final recommendations from the consultation be used by national onchocerciasis task forces in endemic countries in Africa to develop individual elimination strategies, following the lead of Uganda and northern Sudan, which

has a policy of elimination for the Abu Hamad focus.

JAF is the top governing body of APOC, determining its overall policy and strategy and approving its annual budget and plan of action. JAF representatives include governments of onchocerciasis-endemic countries, financial donors, Merck & Co., Inc., the Mectizan Donation Program, nongovernmental development organizations such as The Carter Center, and APOC's technical consultative committee.

JAF meets annually in December, and this December meeting was



S. Bush/SightSavers International

Attendees of the Joint Action Forum, December 2008 in Kampala, Uganda, included Uganda President Yoweri Museveni (front row, center), Sudan federal Minister of Health Dr. Tabita Shakoi (on President Museveni's right), APOC Director Dr. Uche Amazigo (on President Museveni's left), ministers of health, representatives of nongovernmental development organizations, and donors.

its 14th. Dr. Moses Katarbwa represented The Carter Center.

## Study Finds Mectizan Effective Against Some Worms in Nigeria

Mectizan® (ivermectin) is the drug of choice for treating onchocerciasis, but its positive impact goes far beyond the one

disease. Dr. Julie Gutman, a consultant from Emory University, conducted a study on the effect annual ivermectin mass drug administration is having on

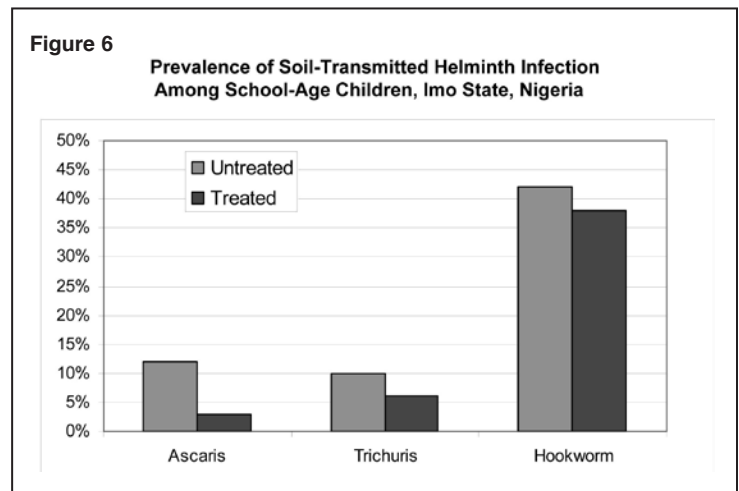
three intestinal worms: *Ascaris lumbricoides*, hookworm, and *Trichuris trichiura*. The study compared worm prevalence in local government areas with a mass drug administration program for ivermectin to the prevalence of those without in Imo state, Nigeria.

Intestinal worm (soil-transmitted

continues on page 10



Children who participated in intestinal worm study receive cups to provide samples.



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helminth [STH]) infections are responsible for significant morbidity among children living in this resource-poor setting and occur throughout Imo state, both inside and outside the mass drug administration zones. Although annual mass drug administration for onchocerciasis has been ongoing in Imo state in 18 local government areas (LGAs) since 1995, some areas of

the state are not endemic for the disease and thus have no program for ivermectin distribution.

In Dr. Gutman's study, a total of 1,031 school-age children were examined by a Kato Katz stool test; 537 from untreated and 494 from treated LGAs (see Figure 6). Hookworm was the most common of the three infections studied, and there was no difference in its prevalence between areas that had received ongoing ivermectin treatment

and those that had not.

In contrast, the prevalence of ascaris and trichuris infections was lower among children from treated LGAs ( $p < 0.05$ ). The study concluded that mass drug administration for onchocerciasis has the added benefit of reducing ascaris and trichuris prevalence, but not that of hookworm. The use of a drug more effective in combating hookworm, such as albendazole or mebendazole, was recommended.

## Vitamin A Distribution Complicated by Multiple Systems

Vitamin A supplements (VAS) for young children have been called a miracle drug by some because of the tremendous benefits they can provide at very low cost. However, complicated systems of supply and delivery have challenged organizations trying to provide the vitamin.

As part of its River Blindness Program, The Carter Center has been assisting in vitamin A distribution once per year in conjunction with Mectizan

distribution. However, as systems of VAS distribution overlap among governmental and nongovernmental organizations, there is concern about multiple supplements being provided to the same child in a short time interval. The World Health Organization recommends spacing VAS by at least 30 days when alternative mechanisms for vitamin A distribution are active in the same areas.

For more than 20 years, the World Health Organization and UNICEF have advocated for VAS every six months. In most countries, vitamin A capsules are provided through UNICEF to ministries of health, who then distribute them through immunization programs, clinics, or stand-alone distribution systems with or without assistance from organizations like The Carter Center.

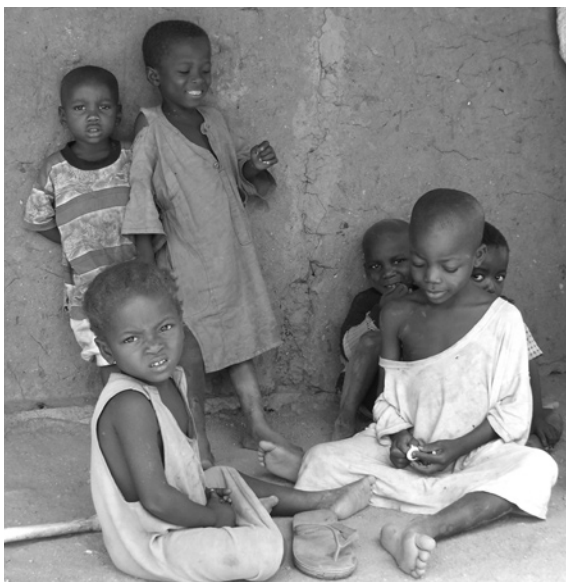
Vitamin A distribution in Carter Center-assisted programs dropped in 2008 to 674,725 from 842,857 in 2007

due to the prevalence of alternative strategies and the resulting inadequate and ill-timed vitamin A supply. In Nigeria, a new vertical distribution system had been established in 2008; consequently, The Carter Center assisted in a smaller "mop-up" strategy to ensure that all children missed by the primary vitamin A distribution system would be treated.

In Uganda, vitamin A is being provided in immunization campaigns from March to May and from September to November. The approach in Cameroon varies, depending on provincial government policies.

To ensure best-practice vitamin A delivery, the Center's country programs are working to improve coordination with the ministries of health and UNICEF to be helpful where possible. The Carter Center's primary goal is to assist Mectizan distribution; the Center will assist with VAS if it can be done simultaneously with Mectizan administration and done safely, coordinating with other VAS distribution mechanisms.

E. Staub



Very young children, such as these from Nigeria, benefit from vitamin A supplementation.

## Schistosomiasis Treatments Skyrocket With Recent Praziquantel Donation

Due to a generous and unprecedented donation of the medicine praziquantel, the number of children treated by a Carter Center-assisted program for the parasitic disease schistosomiasis quintupled from 2007 to 2008. Merck KGaA (E. Merck) made the donation to the World Health Organization, and they are providing 1.5 million praziquantel tablets per year for the next several years to Plateau and Nasarawa states in Nigeria, where the Carter Center-assisted Schistosomiasis Control Program has operated since 1998.

Mass distribution of praziquantel can significantly reduce schistosomiasis morbidity. But unlike the drugs used to treat river blindness and lymphatic filariasis (Mectizan®, donated by Merck & Co., Inc., and albendazole, donated by GlaxoSmithKline), praziquantel has not been widely donated and costs approximately \$0.20 US per treatment. The cost of praziquantel has severely limited mass treatment programs for schistosomiasis.

With the donation, the Carter Center program assisted in 1,137,735 treatments in Delta, Plateau, and Nasarawa states in 2008, almost as many

in one year as had been assisted by the program cumulatively in the previous nine years (1,146,981, see Figure 7). Treatments were able to be offered to all school-aged children living in Plateau and Nasarawa states, the first time such broad coverage was possible.

In Delta state, schistosomiasis activities are not assisted by the E. Merck/WHO donation, and treatments numbered 146,655. Activities there are funded primarily by the Izumi Foundation and Chevron, as well as many individual donors. The major limiting factors to this state's program are the expense of mapping the distribution of schistosomiasis and the cost of praziquantel.

Schistosomiasis in Africa is usually caused by *Schistosoma mansoni* or *S. haematobium*. School-age children are the most heavily infected, and the most obvious symptom of *S. haematobium* infections is blood in urine.

## Study Finds Bed Nets Damaged After Use

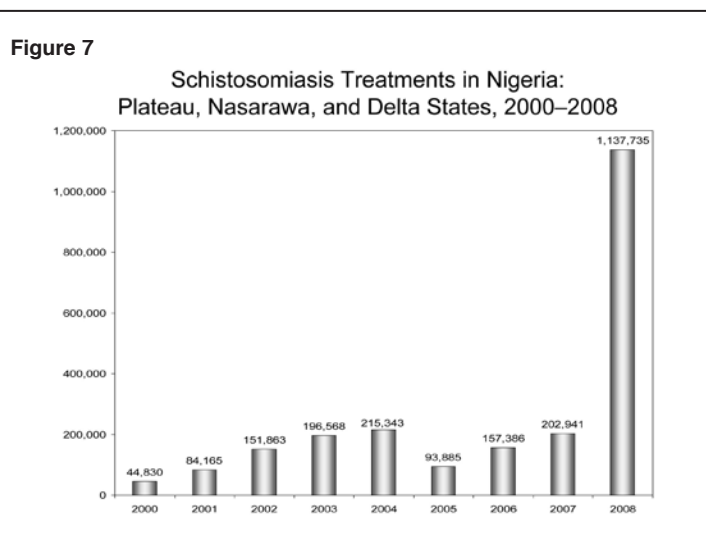
With limited washing and care, the life span of the newest generation of bed net is reportedly three to five years. To determine whether the nets indeed last as long as is estimated, The Carter Center is testing the durability of bed nets that have been used in real-life conditions.

In 2007, The Carter Center supplied and distributed 3 million long-lasting insecticidal nets (LLIN) in the Amhara (1.26 million), Oromia (990,000), and Southern Nations, Nationalities, and Peoples (750,000) regions of Ethiopia. "Long lasting" means that the insecticide on the nets persists through at least 20 washes, and therefore if washed relatively infrequently, LLINs should not need to be retreated with insecticide during their lifetime, unlike previous generations of insecticide-treated nets that needed retreating every six months.

However, although the lifetime of an LLIN is estimated to be three to five years, the durability of nets in practice in the real world, as opposed to a laboratory, is not known. Nets in actual use are exposed to smoke, embers, and heat from indoor cooking; animals (e.g., goats, cats, rats, mice); small children; and snags from bed frames. If the net fabric deteriorates quickly into dirty tatters that are not used, then it makes no difference whether the insecticide persists on them.

To conduct the durability test, The Carter Center collected (and replaced)

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# Global Health News

## Bed Nets

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some of the distributed LLINs at intervals to assess them for (1) ability to kill mosquitoes and (2) the amount of physical damage. In Phase 1 of the testing project, conducted in collaboration



L. Gubb

*An Ethiopian family hangs a bed net in their home.*

with Dr. Stephen Smith of the Centers for Disease Control and Prevention, 200 LLINs were collected three to six months after distribution. Testing indicated that although all nets exceeded the World Health Organization standard of killing more than 80 percent of

the mosquitoes exposed for three minutes to the netting, only 43 percent of the nets were undamaged. The average number of holes per net was 4.2, and, even at this early stage, 7 percent of the nets had large (more than 10cm) holes.

For Phase 2 of the study, 220 nets were collected from 11 sites

after up to 18 months of use, and the assessments are currently underway. In addition, nets from both phases are being tested to determine the actual insecticide concentration on the fabric. The results will help the Center and others decide when the nets should be replaced.

## Reference

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