Eye of the Eagle

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Trachoma Program Review Examines Progress in 2007

The ninth annual review of Carter Center-assisted trachoma control programs took place Feb. 11–13, 2008, at Carter Center headquarters in Atlanta, Ga. The more than 70 people who participated represented programs in six countries and major partners, including the Conrad N. Hilton Foundation, the Bill and Melinda Gates Foundation, the Arthur M. Blank Foundation, Lions Clubs of Ethiopia, and Lions Clubs

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Waging Peace. Fighting Disease. Building Hope.

International Foundation.

National program coordinators reported on progress made in 2007 and their program targets for 2008.

In keeping with the theme for this year's meeting, "Ensuring



Program review participants Dr. Oscar Debrah, Dr. Jeremiah Ngondi, and Gideon Gatpan study trachoma reports.

Implementation of the Full SAFE Strategy," the participants discussed best practices for trachoma control in the context of integrated neglected tropical disease programs. Other topics included the importance of strategic planning, coordination of partners, and the use of operational research to create needs-based programs.

Special sessions featured presentations on efficient latrine design; the

> integration of schistosomiasis, trachoma, and lymphatic filariasis during prevalence surveys; and research on media habits. Additional sessions included presentations on women's groups in Mali, the midterm evaluation of the Niger National Trachoma Control Program, and the integration of

> > continued on page 2

River Blindness Treatments Reached New Levels Last Year

he Carter Center River Blindness Program assisted in 12,985,296 Mectizan[®] treatments in 2007, according to data presented at the annual program review Feb. 6–8, 2008, in Atlanta, Ga., which was attended by more than 50 people. This was the largest number of treatments for a year ever reported by the program. Treatments of Mectizan, which is donated by Merck & Co. Inc., increased by 15 percent in 2007 as compared with 2006 and reached 96 percent of the treatment target (known as the ultimate treatment goal or UTG) of 13,578,321. See Table 1 for details about Mectizan treatments *continued on page 8*

Trachoma Review

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interventions targeting trachoma and Guinea worm disease in Southern Sudan.

The following are 2007 highlights reported by the country programs (some include geographic areas and interventions not assisted by The Carter Center):

Ghana

- 899,065 people received azithromycin
- 3,438 household latrines were constructed
- 504 people received trichiasis surgery

Ethiopia

- 45,271 people received trichiasis surgery
- 6,224,372 people received azithromycin
- 41,228 household latrines were constructed

Mali

- 13,610 household latrines were constructed
- 4,371 villages received ongoing health education
- •1,767,877 people received azithromycin

Niger

- 10,725 household latrines were constructed
- 2,804 people received trichiasis surgery
- 5,958,174 people received azithromycin







Nigeria

- 6,448 household latrines were constructed
- 446 villages received ongoing health education
- 5,572 people received trichiasis surgery

Government of Sudan

- 179,698 people received azithromycin
- 2,059 people received trichiasis surgery





Government of Southern Sudan

- 1,475 persons received trichiasis surgery
- 1,371 villages received health education
- 275,382 people received azithromycin

Program Participants

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, Government of Sudan; Dr. Lucia Kur, Government of Southern Sudan; Drs. Uwaezuoke Onyebuchi and Anthonia Njepuome, Nigeria; Dr. Grace Saguti, Tanzania; Dr. Stanley Bubikire, Uganda; and Dr. Zerihun Tadesse and Ali Assen, Ethiopia.

Partner organizations represented at the review included the U.S. Centers for Disease Control and Prevention, the International Trachoma Initiative, Helen Keller International, Lions Clubs International, Research Triangle International, and World Vision International.

The participating Carter Center resident technical advisers and trachoma control program officers included Jim Niquette and Ibrahim Yussif, Ghana; Mohamed Salissou Kane and Ali Amadou, Niger; Jim Ting and Yaya Kamissoko, Mali; Steven Becknell and Gideon Gatpan, Southern Sudan; Teshome Gebre, Dr. Estifanos Biru, Tesfaye Teferi, and Mulat Zerihun, Ethiopia; and Drs. Emmanuel Miri, Abel Eigege, and Nimzing Jip, Nigeria.

In Ethiopia, Carter Center and Lions Celebrate 10 Million Azithromycin Doses for Trachoma

group led by Lions Clubs International Foundation Chairperson Jimmy Ross witnessed a historic moment in trachoma control when the 10 millionth dose of azithromycin (Zithromax[®]) was dispensed in Lions–Carter Center supported program areas of Ethiopia. The antibiotic, donated by Pfizer Inc., is a major component in the fight against blinding trachoma. Representatives from The Carter Center, Lions Clubs



Lion Jimmy Ross celebrates with Meselech Tilahun Bogale, who received the 10 millionth dose of azithromycin.

of Ethiopia, the national trachoma program, and the government of Ethiopia joined the celebration.

This landmark achievement was celebrated with Ato Ayelaw, president of Amhara national regional state; Dr. Asrat Genet, director of Amhara Regional Health Bureau; Dr. Tebebe Y. Berhan, world laureate Lion; and representatives from Lions Clubs in Addis Ababa, Ethiopia. The event offered all partners the opportunity to

renew their commit-

blinding trachoma in the Amhara region and to witness the dedication of health extension workers and communities in the process. The group, which included Lion Teshome Gebre and Dr. Paul Emerson from The Carter Center, was granted an audience with the president of Ethiopia, providing an opportunity for a wider discussion on trachoma and malaria and some coverage on national television stations.

"As Lions, we are passionate about the need to end preventable blindness," said Ross. "It is heartening to see Ethiopian Lions making such a difference in their community," he said. Together with the Amhara Regional Health Bureau, the international coalition is working to eliminate trachoma as a source of blindness from the region by 2012.

A disease caused by bacterial infection, trachoma is the leading cause of preventable blindness worldwide. Seven million people have lost their sight due to trachoma and another 500 million are at risk worldwide. It is estimated that there are 1 million Ethiopians suffering from severe trachoma who are at risk of immediate blindness, 600,000 of whom live in Amhara.

To achieve Ethiopia's goal of eliminating blinding trachoma from Amhara by 2012, the entire population at risk, approximately 19 million people, will need a minimum of three annual doses of azithromycin. Improved sanitation and increased hand and face washing will need to be implemented to further reduce trachoma. The 10 millionth dose of azithromycin comes after just 18 months of full-scale intervention and provides encouraging signs about the feasibility of meeting the elimination target date.

Lions Clubs International Foundation has been involved with blindness prevention and treatment for more than 80 years through its SightFirst program. In addition to supporting tens of thousands of cataract operations, training ophthalmic nurses and surgeons, and strengthening eye care centers in rural and underserved areas, Lions educate communities on eye diseases and help distribute azithromycin to fight trachoma.

Trachoma, Schistosomiasis Assessments **Combined in Two Nigerian States**

istrict-level estimates of prevalence are recommended for mapping trachoma prior to intervention. Where the prevalence of active trachoma (trachomatous inflammation—follicular TF) is 5 to 9 percent in children ages 1 to 9 years, a community-by-community approach to assessment and intervention is suggested. Yet there is no recommended methodology for assessing trachoma at the community level. One option for mapping urinary schistosomiasis, caused by the parasite Schistosoma haematobium, is the rapid assessment of blood in the urine (hematuria) in schoolchildren to provide a community estimate of the burden of the disease. Decisions about drug interventions to control schistosomiasis are made at the community level based on these estimates in schoolchildren.

In Nigeria, The Carter Center and the ministries of health of Plateau and Nasarawa states conducted integrated surveys to map trachoma and urinary schistosomiasis in eight local government areas (LGAs) of the two states to determine whether the integrated results provide sufficient evidence to guide program interventions. In the first survey, trachoma assessment was added to the World Health Organization (WHO)-recommended methodology for urinary schistosomiasis mapping. All rural government primary schools in the LGAs were surveyed by taking a systematic sample of children for each disease. All children younger than age 10 years were eligible for a trachoma exam. All children ages 10

to 14 years were eligible for hematuria assessment with a dipstick test.

The second survey added indicators for urinary schistosomiasis, lymphatic filariasis, and household characteristics like mosquito net ownership to the recommended trachoma survey methodology. A systematic sample of 20 enumeration areas (EA) per LGA served as the primary sampling units. Households in each EA were randomly selected with equal probability. People of all ages were examined for trachoma, and children ages 10 to 14 years were selected for hematuria assessment.

According to WHO guidelines, the findings indicated that districtwide trachoma interventions were not needed for any of the LGAs surveyed. School-based and cluster surveys gave similar district-level estimates for TF.

although trichiasis prevalence could not be derived with school-based methodology. LGA-level estimates of hematuria from cluster surveys were unable to identify communities that warranted praziguantel treatment interventions. School-based surveys identified communities in which antibiotic, face-washing, and environmental interventions are warranted.

Integrating trachoma examinations with urinary schistosomiasis assessments in schools was quick, easy, and useful. School surveys may provide a method of identifying hot spots of trachoma in low-endemic areas where school enrollment is high. LGA estimates of urinary schistosomiasis from integrated cluster surveys may not be useful for planning treatment interventions. The value of disease surveys may be increased by including more than one disease indicator. Carter Center assistance for these surveys was made possible by a grant from the Bill and Melinda Gates Foundation.



A technician from the Nigeria Ministry of Health reads a dipstick test to determine whether a student has urinary schistosomiasis.

Series on the Human Face of Trachoma Control Sudanese Girl Sees Bright Future After Surgery for Trichiasis

ue to an extremely high level of advanced-stage trachoma (trichiasis) in Ayod County, Sudan, an eye clinic in Ayod town was set up to help the county health department further the trachoma control activities of Jonglei state's ministry of health. The clinic building was donated by the Economic Housing Group, and construction support was provided from Terrain Services Limited. In late 2007, local nurses were trained to perform trichiasis surgery, supervised by Sidney Katala, an internationally known trichiasis surgeon. One patient, Nyakier Mabor Gai, spoke to Carter Center staff about her life before and after trichiasis surgery.

"My name, Nyakier, means 'one who was born while crossing the River Nile.' I was born far from home in Unity state when my mother traveled across the River Nile seeking care because she suffered from trichiasis. I don't know my exact age, though my mother believes I am 8 years old. She is the first of my father's four wives and supports me and my seven siblings by farming. My father has a small business in another town and I do not see him often.

"A few years ago, my eyes started hurting me; they were tearing and sensitive to smoke and light. My eyelashes started touching my eyes about six months ago. I wasn't able to open my eyes in the sunlight, so I would sit in the shade with the elderly while my friends went out to play. The most I could do was pound and grind cereals for my mother because I was nearly blind. None of my friends or family knew what to do about my eye pain. My mother prayed that I could receive medical attention, and I could only cry thinking of my grim future.

"In June 2007, my mother heard about an eye clinic opening in Ayod County. She saved money to be able telling everyone I see suffering with trichiasis that they should go to the clinic and be helped. I want to acknowledge the effort made by the surgeons and The Carter Center to help with the trichiasis surgery clinic. Now that I can see, I told my family that I want to go to school and become a successful person. My mother wants to build a better home for us next to town so I and my siblings can attend school. I want to be an example to others who are suffering from trachoma, to show them that they can be treated and live a successful life."



to send me to stay with my Aunt Nyaturuk, who lives next to the Carter Center camp. When I heard the clinic was open, I was one of the first people to wait for surgery there. I was not afraid of the surgery; I could not imagine suffering another day in misery. Just a few days later, I was able to open my eyes without pain and see clearly again. It was a miracle!

"Since my surgery, I have been

At age 8, Nyakier Mabor Gai was nearly blind and faced agonizing pain in her eyes due to trichiasis (above). After surgery, she's optimistic about attending school and having a successful future (left).

This is the eighth in a series of articles showing the human face of the Carter Center Trachoma Control Program. The comments of the individuals highlighted are not reproduced word for word, but reflect the spirit of our conversations with people in the field. The authors try to be faithful to the context, content, and tone of the people depicted. Carter Center trachoma activities in Southern Sudan are supported by a generous grant from the Lions Clubs International Foundation.

Surgery a 'Second Birth' for Mother

The haunting photo on the left shows Ethiopian woman Mare Alehegn being led by her daughter, Enatnesh, immediately following trichiasis surgery. Featured on the front page of The New York Times on March 31, 2006, the photo, taken by Mariella Furrer, and the accompanying story, written by Celia Dugger, introduced hundreds of thousands in the United States to the misery of trachoma. Three years after her surgery, Alehegn's bilateral trichiasis has been completely reversed. Today (shown at far right), she describes her surgery as a "second birth" and calls it an "end to the isolation of trichiasis."



Ghana Makes Strides in Latrine Construction

n 2007, Ghana had a recordbreaking year for household latrine construction with Carter Center support in the country's Northern and Upper West regions. After several years of working to establish an effective mechanism for communitywide latrine construction and attempting to decrease the cost per latrine, the program constructed 2,866 household latrines in 2007, more than its combined output in the previous five years.

In Ghana, the standard latrine promoted by the Community Water and Sanitation Agency is the Mozambican, or the ventilated improved pit (VIP) latrine. The average cost per latrine built in 2007 was \$54.50 with the beneficiary household responsible for contributing the labor and building the latrine superstructure. The program constructed 2,866 household latrines in 2007, more than its combined output in the previous five years.

After six years of latrine promotion, The Carter Center has supported the construction of 5,066 household latrines, about half of the Ghana Trachoma Control Program's total output during the same period. The national program's goal is to build 5,000 latrines in 2008, hopefully doubling its 2007 results. Carter Center assistance to the Ghana Trachoma Program is supported by the Conrad N. Hilton Foundation.



Dr. Paul Emerson, director of the Carter Center's Trachoma Control Program, and a Ghanaian woman discuss her ventilated latrine.

River Blindness Review

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in 2007. Except for Uganda (1,954,178 treatments), all countries were assisted under the Lions–Carter Center SightFirst Initiative, often with the active participation of local Lions.

Participants included Carter Center staff, representatives from ministries of health of Uganda, Cameroon, Nigeria, Sudan, and Ethiopia, and representatives from the Onchocerciasis Elimination Program for the Americas (OEPA), Lions Clubs International Foundation, Merck and the Mectizan® Donation Program, the African Program for Onchocerciasis Control, the Izumi Foundation, the U.S. Centers for Disease Control and Prevention, and the Bill and Melinda Gates Foundation. Guest speakers discussed topics ranging from a study on the costs and savings associated with integrating health programs to a recently published report of alleged Mectizan resistance

Figure 5

Cumulative Mectizan Treatments Delivered by Carter Center-Assisted River Blindness Programs, 1996–2007



in Ghana. In addition, activities to integrate river blindness control with lymphatic filariasis elimination, schistosomiasis control, malaria control, and vitamin A distribution were reviewed. Dr. Frank Richards, director of the Carter Center's malaria, river blindness, lymphatic filariasis, and schistoso-

Table 1

806,182 10,858,760	833,736 11 ,343,975	89% 97% 96%
806,182	833,736	97%
		89%
64,154	72,432	
5,454,758	5,537,142	99%
2,883,468	3,110,238	93%
1,650,198	1,790,427	92%
2,126,536	2,234,346	95%
1,147,996	1,197,632	96%
135,445	145,230	93%
843,095	891,484	95%
Treated	Target	% Achieved
	843,095 135,445 1,147,996 2,126,536 1,650,198 2,883,468 5,454,758	843,095 891,484 135,445 145,230 1,147,996 1,197,632 2,126,536 2,234,346 1,650,198 1,790,427 2,883,468 3,110,238 5,454,758 5,537,142

Onchocerciasis Mectizan Treatments in 2007

miasis programs, chaired the meeting.

One of the important goals of the River Blindness Program is to eliminate onchocerciasis where and when possible. In areas where elimination is deemed possible, Mectizan treatment is used more intensively—every six months—so that transmission can be interrupted. The goal in these cases is that Mectizan distribution can eventually be halted when evidence shows that the parasite population has disappeared. For areas where elimination currently is not possible, sustainability and integration of programs are vital for Mectizan treatment to continue indefinitely. In the areas where the River Blindness Program is working to eliminate river blindness, which includes six countries in Latin America plus areas in Sudan and Uganda, the Center assisted in 2.13 million treatments given semiannually. The majority of assisted treatments, 10.86 million, were given annually in Nigeria, Cameroon, Ethiopia, and nonelimination areas of Uganda and Sudan.



Summary by Country Program

Nigeria

More than half of the 100 million Mectizan treatments given since 1996 were in Nigeria. In 2007, the Center assisted in 5.4 million treatments in Nigeria, 99 percent of the UTG. In Plateau and Nasarawa states, the river blindness program is integrated with the lymphatic filariasis program, with funding from the Bill and Melinda Gates Foundation and GlaxoSmith-Kline. The integrated program assisted in 3,414,800 combined treatments of Mectizan and albendazole, which is 93 percent of its UTG. In addition, 202,941 praziguantel treatments for schistosomiasis; 96,270 governmentdonated insecticide-treated bed nets, and 534,770 vitamin A supplements to young children were provided. Two of the seven Carter Center-assisted states in the Southeast are beginning an integrated malaria and lymphatic filariasis program and presented plans for distribution of 200,000 long-lasting insecticidal bed nets (see p. 11).

The urinary schistosomiasis program in Plateau, Nasarawa, and Delta states, funded in part by Izumi Foundation and ChevronTexaco Corp., reached its 1 millionth treatment in 2007 since its beginning in 1999. The World Health Organization will provide more than 1.5 million praziguantel tablets per year for the next 10 years to the Plateau-Nasarawa program beginning in 2008, and the program anticipates quadrupling the number of treatments it assists in 2008. The praziquantel is part of a large donation to the World Health Organization by Merck KGaA (E-Merck) Germany.

Ethiopia

The Lions–Carter Center partnership, working in eight of the 10 endemic zones in Ethiopia, helped treat 2,554,576 people, which is 93 percent of the 2007 UTG and a 13 percent increase from 2006. The Center purchased and helped distribute 746,924 long-lasting insecticide-treated bed nets in River Blindness Program-assisted areas in 2007 as part of the new Carter Center malaria program.

Cameroon

A total of 1,650,198 people in North and West provinces received Lions– Carter Center-assisted mass treatment in 2007, which was 92 percent of the UTG. Vitamin A distribution, integrated into the system of communitydirected treatment with Mectizan, continued, and 270,027 children received supplements in 2007.

Uganda

In Uganda, the program assisted in 1,945,986 Mectizan treatments in 2007, which was 97 percent of its UTG and an incredible 87 percent increase from 2006 treatments. This was due to a government-led approach for elimination in several isolated foci using twice-per-year treatments and vector control with ABATE, a larvicide produced by BASF. In addition, vitamin A distribution integrated with Mectizan distribution resulted in 35,835 supplemental treatments in the Center-assisted areas in 2007.

Sudan

Sudan's Khartoum office reported 199,599 treatments in 2007, a 75 percent increase from 2006 and UTG coverage of 92 percent. Like Uganda, Sudan has shifted to a semiannual treatment approach to eliminate river blindness from the Abu Hamad focus on the River Nile.

The Americas

The Onchocerciasis Elimination Program for the Americas (OEPA) assists all six endemic countries in the Americas to eliminate eye disease and interrupt transmission of river blindness. In the 13 endemic foci for river blindness, the program assisted in 843,095 treatments in 2007, which

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River Blindness Review

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was 95 percent of its goal. Although this is a slight decrease from 2006, the reduction is a result of the Santa Rosa focus of Guatemala having halted transmission and no longer needing to provide treatments. Further reduction in numbers of treatments is expected in 2008 as Lopez de Micay in Colombia, Escuintla in Guatemala, Northern Chiapas in Mexico, and the Rio Santiago subfocus in Ecuador also have declared that transmission has ceased and will halt treatments. Current projections from OEPA show that Mectizan treatments in the Americas could be halted by the year 2012 (see Figure 6). Once mass drug administration is halted, a three-year observation period is required to monitor for disease recurrence.

Carter Center Reaches Milestone of 100 Million Assisted Treatments for River Blindness

n November 2007, The Carter Center celebrated the 100 millionth assisted Mectizan® treatments for onchocerciasis since the Center's River Blindness Program launched in 1996. The treatments took place in 11 countries in Latin America and Africa. Of the 100 million, 84 percent were supported by the Lions–Carter Center SightFirst Initiative.

Former U.S. President Jimmy Carter has described a Mectizan tablet as "more precious than a diamond of the same size" to those who suffer from river blindness.

Special "10⁸ " (the scientific notation for 100,000,000) medallions and lapel pins were awarded to program partners at the 12th Annual River

Blindness Program Review held in Atlanta, Ga., in February. The awards are inscribed with the words "More Precious Than a Diamond"



and contain an image designed by artist Sherri Richards, wife of **River Blindness** Program Director Dr. Frank Richards. Medallions were awarded to all 11 national programs, Lions Clubs SightFirst, Merck & Co. Inc., the Mectizan Donation Program, the U.S. Centers for Disease Control and Prevention, the African Program for



Dr. Frank Richards (right), director of the Carter Center's River Blindness Program, presents World Laureate Lion Dr. Tebebe Berhan of Ethiopia with a medallion to commemorate the 100 millionth Mectizan dose.

Onchocerciasis Control, the Onchocerciasis Program for the Americas, the World Bank, the World Health Organization, the Pan American Health Organization, the Bill and Melinda Gates Foundation, and a number of individuals, includ-

ing President Carter; John Moores,

who is chairman of The Carter Center and founder of the River Blindness Foundation; and key Carter Center staff and country representatives working on onchocerciasis.

"Through a strong international coalition we are preventing blindness one person at a time," said Dr. Richards.

Southeast Nigeria Office Prepares for Disease Integration with Nets, Lab

ntensity is in the air at The Carter Center office in Owerri, Nigeria, in Imo state. The site is headquarters of a malaria–lymphatic filariasis integration project sponsored by a grant from the Bill and Melinda Gates Foundation. Before receiving the grant, the Owerri office focused solely on assisting Mectizan[®] distribution activities for onchocerciasis to a population of 5 million people in the seven states in southeast Nigeria. Now the office



Dr. Emmanual Emukah and Jude Onyenama, acting project administrator in Imo and Abia, examine specimens in the new lab.

is also helping the Ministry of Health distribute long-lasting insecticidal bed nets in Imo and Ebonyi states in the hopes of simultaneously combating lymphatic filariasis and malaria. Four districts, with a combined population of more than 500,000 people, are targeted for the distribution of 200,000 nets.

A storage room was converted to a white-tiled, bustling laboratory.

Half of the shipment of nets arrived at the Owerri office, while the other half went to Ebonyi state, in March 2008. The 100,000 bed nets at the Owerri office filled two large conference rooms floor to ceiling and spilled out into two shipping containers outside the building. Dr. Emmanual Emukah, director of Carter Center Southeast programs, said he is looking forward to moving the nets out of the office and into the hands of those who need them by the beginning of the malaria season.

Both malaria and lymphatic filariasis are transmitted by mosquitoes. In Nigeria, both are transmitted by Anopheles mosquitoes. To track the impact of nets against lymphatic filariasis and malaria for the project, three scientists have been hired to conduct repetitive blood and mosquito surveys, requiring laboratory equipment such as microscopes and various diagnostic tools. Using funds from the Bill and Melinda Gates Foundation, a storage room was converted to a white-tiled, bustling laboratory. In addition, Imo State University is providing students and faculty members to help with both field and laboratory assessments.



Global Health News

Gebre Awarded the Lions Clubs Presidential Medal

ions Clubs and Lions Clubs International Foundation awarded its Presidential Medal to Teshome Gebre, Ethiopia country representative for The Carter Center, in a ceremony at the National Palace in Addis Ababa, Ethiopia, on March 28. The award was presented by Ethiopia President Girma Wolde-Giorgis, who is also a Lion. The citation, read by World Laureate Lion Dr. Tebebe Y. Berhan, noted Gebre's service in the elimination of Guinea worm disease from Ethiopia. At the same ceremony, Dr. Tebebe and Dr. Frank Richards of

The Carter Center awarded the president with the Carter Center's "10⁸" medallion for river blindness

(see p. 10). River blindness medallions were also presented to Dr. Shiferaw Kebede, state minister of health, and Dr. Dadi Jimma, malaria control team leader, for their outstanding work in Ethiopia in Lions–Carter Center onchocerciasis control activities. More than 12.4 million Mectizan[®] treatments have been

This issue is made possible in part thanks to the Aichael G. DeGroote Health Program Publications Fund. provided in Ethiopia by the Ministry of Health–Lions–Carter Center partnership since 2001.



From left: Lions George Stavrou, Teshome Gebre, Dr. Tebebe Y. Berhan, and Ramendra Shah.

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