

EYE of the EAGLE



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Above: This Yanomami boy and his community members live in the last area of active onchocerciasis transmission in the Americas, the Amazon Rainforest along the border of Venezuela and Brazil. (Photo: CAICET/Oscar Noya Alarcón)

THE
CARTER CENTER



Return to In-Person Format Energizes IACO 2022

KEY TAKEAWAY: November's IACO meeting focused on challenges facing the Yanomami Focus Area, the last remaining area of active onchocerciasis transmission in the Americas.

With many colleagues seeing each other face to face—or mask to mask—for the first time in three years, the 32nd InterAmerican Conference on Onchocerciasis (IACO), held Nov. 17–18, 2022, in Guatemala City, featured several other firsts: Dr. Kashaf Ijaz, Carter Center vice president for health programs, and Gregory Noland, director of the Carter Center's River Blindness Elimination Program, attended and met Onchocerciasis Elimination Program for the Americas (OEPA) and partner staff for the first time. Additionally, Dr. Maria Eugenia Grillet, professor at Venezuela's Instituto de Zoología y Ecología, was elected to chair the Program Coordinating Committee, the steering committee for OEPA, becoming the first woman and second Latin American to fill that role.

Unlike the abbreviated 2021

conference, IACO 2022's hybrid format allowed full days of presentations that drilled deep into the challenges facing the Yanomami Focus Area—the last remaining area of active onchocerciasis transmission in the Americas. The Yanomami area is populated by nearly 40,000 nomadic indigenous people and extends through remote and densely forested regions of Brazil and Venezuela. Illegal mining and associated conflict with indigenous communities, clashes between the endemic communities, frequent migration across the border between the two countries, and reduction in staffing of health posts in Brazil were some of the key challenges discussed.

Country programs provided updates on ongoing and upcoming serology and entomology assessments. Provisional results from serology conducted in three subareas

of Venezuela yielded zero positives among 212 blood samples; additional assessment results are expected to be ready by the 2023 midyear Program Coordinating Committee meeting. Programs also continued to hone their “scorecard” system of classifying communities, identifying those needing enhanced attention to ensure the program reaches its goal of transmission elimination in the Americas. The Venezuelan program reported it is achieving good coverage with quarterly treatments, with provisional 2022 coverage in rounds 1 and 2 at 95% and 86%, respectively. Venezuela therefore increased from 37 to 67 communities under quarterly rather than semiannual treatment for the second half of 2022, focused primarily on communities deemed “high priority” with the scorecard system. The Brazilian program noted that the newly elected presidential administration plans to create a Ministry of Indigenous Affairs. The program hopes this will lead to adequate staffing of health posts, which would in turn increase treatment coverage.


Alba Lucía Morales, OEPA health education advisor, reported on an innovative plan to provide health workers in Venezuela with electronic tablets and smartphones, which the team can use to play educational videos for indigenous health agents and community members, collect stories from the community, and document other aspects of their work. A captivating educational video was shown, produced in consultation with two anthropologists who work with the indigenous populations of the Amazon Rainforest. The Venezuela team indicated that 90% of treatments in its program are now being



A health team in Venezuela prepares to travel into the Amazon Rainforest to deliver treatment.

given by indigenous health agents; the electronic devices are expected to further strengthen community and health agent involvement in their own programs.

OEPA acknowledged with gratitude the continued support of the U.S. Agency for International Development, and Merck & Co., Inc. (Rahway, N.J., USA) via its financial

contributions as well as its donation of Mectizan.[®] OEPA appreciates the support of local Lions Clubs of the endemic and formerly endemic countries. 

Nigeria, Ethiopia Able to Halt Record Number of Treatments

KEY TAKEAWAY: Nigeria and Ethiopia stop record numbers of treatments after assessments show that onchocerciasis transmission has been interrupted.

Ethiopia and Nigeria announced major achievements in interrupting transmission of onchocerciasis, also known as river blindness, at their annual expert advisory meetings in late 2022.

At its hybrid 15th meeting held Dec. 7–9 in Abuja, Nigeria’s National Onchocerciasis Elimination Committee (NOEC) recommended that four Carter Center-assisted states—Abia, Anambra, Enugu, and Imo—halt Mectizan[®] treatment (donated by Merck & Co., Inc., Rahway, N.J., USA) for onchocerciasis, having interrupted transmission and thus meeting World Health Organization (WHO) criteria to do so. The subsequent Federal Ministry of Health approval of this recommendation covers a record 18.9 million people.

Meanwhile, the ninth Ethiopian Onchocerciasis Elimination Expert Advisory Committee (EOEEAC) meeting, held Oct. 19–21 in Addis Ababa, determined that transmission had been interrupted in 17 districts of the South West and Oromia regions and that treatments could be stopped for more than 1.3 million residents.


These are the largest stop-treatment decisions to date for both nations, and Nigeria’s likely represents the single largest stop-treatment decision for onchocerciasis globally

to date. All relevant areas will now proceed to three to five years of post-treatment surveillance except for areas that remain under Mectizan and albendazole (donated by GSK) treatment for lymphatic filariasis.

These achievements are a testament to decades of partnership between The Carter Center, the ministries of health, Merck, many donors, and volunteer community drug distributors. Since 2005, more than 137 million Mectizan treatments were provided to break transmission of onchocerciasis in the four Nigerian states.

Dr. Emmanuel Miri, Carter Center country representative in Nigeria, presented results of entomological and serological assessments that led to the NOEC’s decision: 52,187 black flies were negative for *Onchocerca volvulus*, the parasite that causes river blindness, while prevalence of Ov16 antibodies in children under 10 years old was significantly lower than the WHO threshold of 0.1% in each state. In total, more than 24 million people in seven Carter Center-assisted states no longer require treatment for river blindness, including more than 2 million residents of Plateau and Nasarawa states, where transmission was declared eliminated in 2021 following completion of post-treatment surveillance.

The Carter Center began assisting Ethiopia’s onchocerciasis program in 2001, expanding gradually over time. More than 160 million Mectizan treatments have been administered. Aderajew Mohammed and Yohannes Eshetu, both from The Carter Center in Ethiopia, presented the results, which came from 15,917 children and 46,159 flies. There are now 2.9 million Ethiopians living in areas that have qualified to stop MDA for river blindness. Twenty-three other districts will initiate entomological assessments in 2023 after presenting results of recent epidemiological surveys that meet WHO serological stop-treatment thresholds. The committee also urged that funding be provided to begin MDA in 28 newly identified endemic districts with a total population of more than 3.6 million people. An additional 94 districts require further evaluation by a subcommittee to determine whether MDA is needed.

The meetings were hosted by the respective federal ministries of health of Nigeria and Ethiopia with support from The Carter Center. Representation included the Bill & Melinda Gates Foundation, the U.S. Centers for Disease Control and Prevention, The END Fund, the Mectizan Donation Program, USAID’s Act to End NTDs–East Program led by RTI International, the Lions Clubs International Foundation, WHO, The Carter Center, and other nongovernmental organization partners of each country. 

14 of 17 Ugandan Foci Have Eliminated River Blindness


KEY TAKEAWAY: The last focus of ongoing transmission in Uganda—Lhubiriha—was reclassified as “suspected transmission interruption,” signifying there are no longer any areas of ongoing transmission in the country.

The 15th Uganda Onchocerciasis Elimination Expert Advisory Committee met Aug. 3–5, 2022, in Kampala, Uganda, in person for the first time since 2019. The committee provides scientific and technical recommendations to the Uganda Ministry of Health to achieve the goal of eliminating transmission of onchocerciasis (also known as river blindness) in the country. The key outcomes were that three additional foci—Budongo, Bwindi, and Maracha-Terego—were reclassified as “transmission eliminated” after successfully completing post-treatment surveillance and the Lhubiriha focus was reclassified as “suspected transmission interruption,” meaning there are no longer any areas

of “ongoing transmission” in Uganda. (see Figure 1).

The “transmission elimination” recommendations were made after Budongo and Bwindi documented the continued absence of infective black flies and Ov16 anti-parasite antibody prevalence was significantly less than 0.1% in children under 10 years of age at least three years after stopping mass drug administration (MDA) with ivermectin (Mectizan,[®] donated by Merck & Co. Inc., Rahway, N.J., USA). Maracha-Terego was provisionally reclassified pending follow-up testing of seven Ov16-positive children among 3,373 tested. The total population saved from onchocerciasis in these

three foci in 2022 is 566,871, while 2,518,901 are no longer at risk since the inception of the national elimination policy in 2007.

Of the 17 original transmission foci in the country, 14 (82%) have now achieved transmission elimination status, one (6%) is under post-treatment surveillance, and two (12%) remain under MDA. The two foci under MDA are cross-border special intervention zones with the Democratic Republic of the Congo and the Republic of South Sudan. Representatives from both countries attended the meeting, signaling progress in strengthened binational coordination. Support for the Carter Center’s work in Uganda is provided by USAID’s Act to End NTDs–East Program led by RTI International, and the ELMA Foundation. 

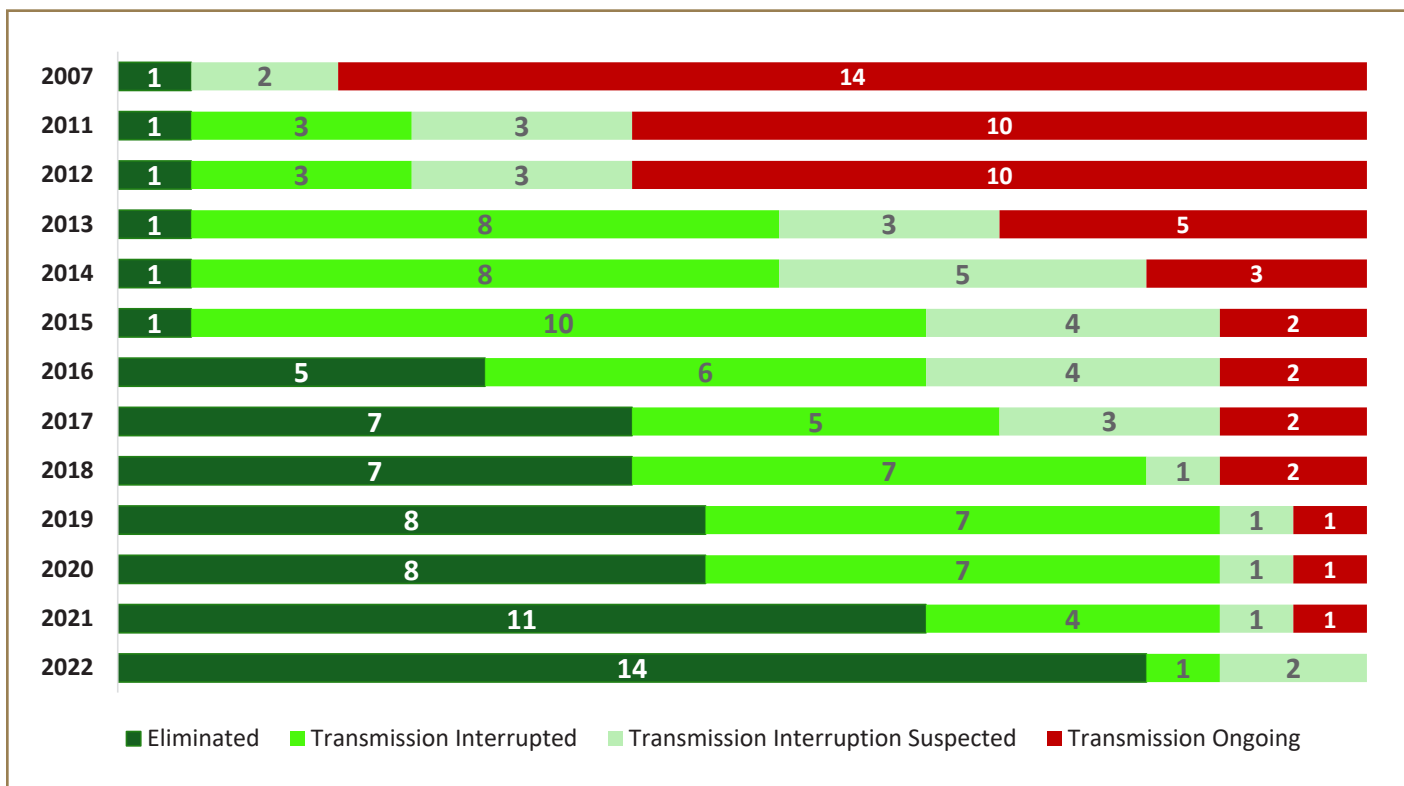


Figure 1. Progress of River Blindness Elimination in Uganda, by Number of Foci, 2007–2022

Coordinator Brings ‘Right Mindset’ to Ethiopia Programs

Coordination is key when working with multiple disease elimination programs, and Birilie Ferede brings that skill to The Carter Center in Ethiopia.

As a project coordinator of the Center’s river blindness and lymphatic filariasis programs in the Amhara region’s Awi zone, Ferede has created and strengthened partnerships at all levels.

Ferede provides technical assistance and support to zone and district health offices to improve treatment coverage in hard-to-reach areas of the zone.

One challenging district is Jawi, which covers more than 50% of the zone and has high population migration tied to agricultural activities. Jawi is co-endemic for river blindness and lymphatic filariasis.

“Birilie exerted his utmost effort by coordinating the zone and district health staff to reach every corner of Jawi district, including *kebeles* [villages] that had never received any health care before,” said Dr. Zerihun Tadesse,

the Center’s Ethiopia country representative.

Out of three *woredas* [districts] in Awi zone that were previously endemic for lymphatic filariasis, two passed a transmission assessment survey after five rounds of mass drug administration.

“Birilie’s contribution has been enormous,” Tadesse said. “In fact, according to partners in the area, the achievement so far in the river blindness and lymphatic filariasis projects in Awi zone would have been difficult to conceive without his leadership, commitment, and technical support.”

Ferede is an experienced training facilitator who uses a participatory approach to equip community drug distributors, health extension workers, and health workers with basic skills and knowledge. He has a significant role in strengthening partnerships with the



In Ethiopia, Birilie Ferede (left) is a project coordinator of the Carter Center’s river blindness and lymphatic filariasis programs in the Amhara region’s Awi zone.

zone health department, *woreda* health offices and other governmental entities.

“Birilie has a strong commitment to go the extra mile and support other Center-assisted programs anywhere in the Amhara region,” Tadesse said. “He is equipped with the right mindset and competence needed for program integration.” **E**

Carter Center Surpasses 500 Million Mectizan Treatments

In October 2022, The Carter Center and its partners celebrated the distribution of 500 million Mectizan® treatments for river blindness by the Center. Since 1996, the Center’s River Blindness Elimination Program has assisted ministries of health in Africa and Latin America to eliminate river blindness transmission. The primary intervention is mass administration of ivermectin (Mectizan®, donated by Merck & Co., Inc., Rahway, N.J.), conducted once, twice, or four times per year in endemic areas. The river blindness program assists with treatment for lymphatic filariasis with Mectizan and albendazole (donated by GSK) in co-endemic areas.

Carter Center staff, government health officials, and partners gathered in Addis Ababa to celebrate the treatment milestone. Partner organizations were presented with awards for their contributions while Zerihun Tadesse, Carter Center country representative in Ethiopia, unveiled a commemorative medallion designed by the Ethiopia team.

Gregory Noland, director of the river blindness program, recounted the history of Mectizan, President Carter’s role in Merck’s donation, and the impact of treatments to date. Through October 2022, more than 12.3 million people in nine countries no longer need treatment for the parasitic disease. He highlighted the power of partnership between ministries of health, community health workers, and dedicated partner organizations, including Merck & Co., Inc.; the Bill & Melinda Gates Foundation; Carlos Slim Foundation; The ELMA Foundation; the Reaching the Last Mile Fund housed within The END Fund; the Lions Clubs International Foundation; Margaret A. Cargill Philanthropies; John J. Moores; RTI International; His Highness Sheikh Mohamed bin Zayed Al Nahyan, president of the United Arab Emirates, through his Reaching the Last Mile initiative; and the U.S. Agency for International Development. **E**

'Wait and Watch' Surveillance Approach Could Save Effort, Money

Recrudescence, or the return, of trachoma after the threshold for elimination as a public health problem has been reached is a serious concern for the global trachoma program. Many district-level surveillance surveys are resulting in a trichomatous inflammation-follicular (TF) rate among children ages 1–9 years above the elimination threshold of 5%. This problem is particularly acute in Ethiopia, where over half of surveillance surveys have had results above threshold. Once a district returns to TF prevalence above threshold, a program must restart expensive mass drug administration (MDA) campaigns and the ensuing costly survey cycles.

In Ethiopia's Amhara region, most

surveillance surveys that result in a TF prevalence $\geq 5\%$ have a prevalence close to 5%, making it difficult to determine whether the result is due to true recrudescence or simply statistical variability. In 2021, The Carter Center, with partner Amhara Regional Health Bureau, conducted a study to monitor recrudescence by not automatically restarting MDA in two districts with a TF prevalence $\geq 5\%$ at surveillance survey. This is the "Wait" element of "Wait and Watch." The districts were instead resurveyed, without additional MDA interventions, one year later using traditional and alternative trachoma indicators, such as measures of infection and serology. This is the "Watch" element.

Metema and Woreta Town, the two districts selected for this study, were first surveyed to measure the impact of interventions in 2013 and 2011, respectively. In 2017, both districts fell below the TF 5% threshold for the first time (See Figure 2). During the 2019 surveillance surveys, both Metema (5.2%) and Woreta Town (5.1%) had a TF prevalence just greater than the threshold. Rather than re-enroll both districts in MDA, no MDA occurred in these districts during 2020, and they were resurveyed in 2021 to assess prevalence. At this 2021 survey, the TF prevalence in Metema and Woreta Town was 3.6% and 2.5% respectively, both back under the 5% threshold. For alternative trachoma indicators, *C. trachomatis* infection was detected only in Woreta Town, with a prevalence of 1.2% among children ages 1–5 years. When available, serology data will help to confirm this low trachoma prevalence and provide validation.

The Amhara program should consider these two districts as having met the elimination threshold and should not restart MDA. The program should continue to use this approach for other districts with a TF prevalence $\geq 5\%$ at surveillance survey. This method could save significant resources, while still meeting elimination goals. **E**

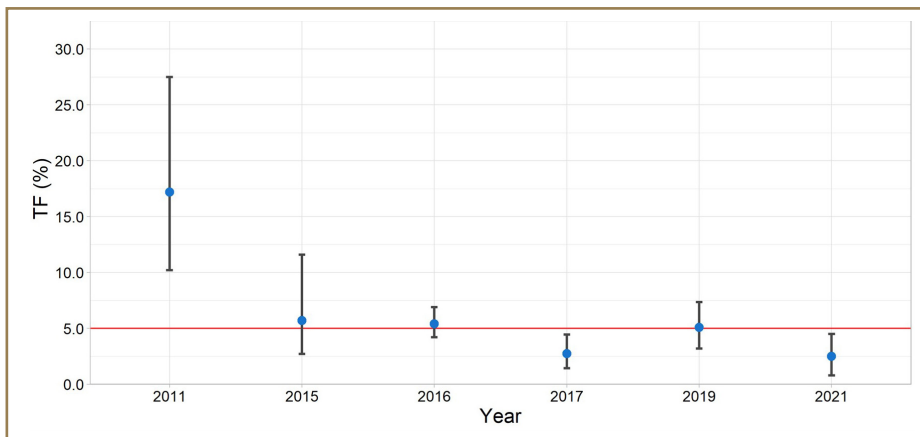


Figure 2. Trichomatous inflammation-follicular (TF) prevalence over time in Woreta Town district, Amhara region, Ethiopia.

Carter Center Director Joins Trachoma Expert Committee

The path to eliminating trachoma as a public health problem is filled with unforeseen obstacles. It takes effective collaboration to reach the trachoma community's collective goals.

In December 2022, Kelly Callahan, director of the Carter Center's Trachoma Control Program, joined the Trachoma Expert Committee, an independent

entity that serves as an advisory body to the International Trachoma Initiative, Pfizer Inc, and the Task Force for Global Health. Committee members—experts in trachoma who meet to discuss and advise on operational, strategic, and technical concerns—are invited to join but do not represent their organizations.

For over a decade, members of

the Carter Center's Trachoma Control Program have been observers or active participants but not members of the committee. Callahan brings nearly 25 years of neglected tropical disease knowledge, particularly expertise in African countries with high prevalence rates of trachoma—regions that are often fraught with insecurity, poverty, and limited resources. **E**

Ethiopian Expert Demonstrates Surgical Technique

Trachoma, the leading infectious cause of blindness worldwide, has stolen sight from millions of people across the globe. Individuals living in poverty, with limited access to water and sanitation, are at greater risk of infection, and within this group, women and children are the most at risk. Over time, trachoma infection can lead to trachomatous trichiasis (TT), the late blinding stage of the disease. If left untreated, TT can lead to irreversible blindness.

In Amhara, Ethiopia, The Carter Center has been working with the Amhara Regional Health Bureau since 2001 to provide more than 746,000 surgeries.

During a September 2022 donor event at The Carter Center in Atlanta, guests got a glimpse of how TT surgery outreach works in Amhara, and how nurses are trained to become TT surgeons.

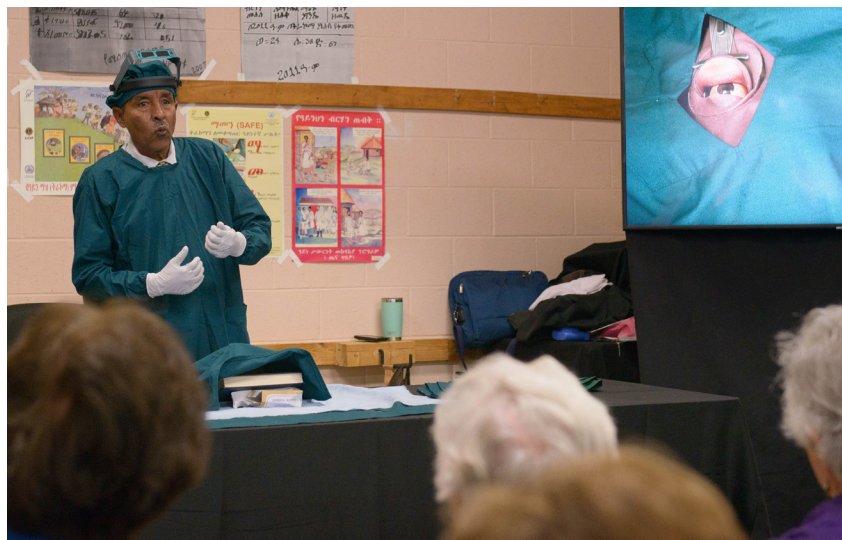
Mulat Zerihun, senior technical advisor, traveled from Ethiopia to share his knowledge from over 30 years of experience. Along with Kim Jensen, associate director of the Trachoma

Control Program, he explained how community members go house to house to screen individuals for signs of TT and later accompany suspected TT cases to a health center to be screened and offered surgery by a TT surgeon, if required. A surgical camp simulation showed guests

how surgical outreach can be conducted in remote areas, while always focusing on the quality of the surgery provision. Zerihun demonstrated how TT surgeons are trained to conduct the 20-minute procedure using a 3D-printed silicone mannequin, which allows them to practice before conducting live surgery.

Attendees learned how a simple procedure can have a profound impact

on the lives of hundreds of thousands of people, and even more. As Zerihun highlighted, it is not only the people receiving surgery who are impacted, it is also their immediate and extended families. Women suffer from TT at twice the rate of men, and, as Zerihun stated, women are the pillar that holds up a household. Providing surgery to women impacts millions of people in Amhara and its communities. **E**



In Atlanta, Mulat Zerihun explains to a layperson audience the steps of TT surgery.

East Africa Regional Trachoma Partners Discuss Collaboration

KEY TAKEAWAY: Last August, representatives from seven East African countries discussed trachoma and current challenges, including how to provide services to refugees, internally displaced populations, economic migrants, and mobile populations.

For two days in mid-August 2022, representatives from Burundi, Ethiopia, Kenya, Sudan, South Sudan, Tanzania, and Uganda met in Dar es Salaam, Tanzania, to discuss the status of trachoma in their respective countries. Under the meeting theme “Accelerating toward elimination: identifying and overcoming endgame challenges,” ministries of health and implementing partners, including The Carter Center, discussed how to provide services to refugees,

internally displaced populations, economic migrants, and mobile populations. Unfortunately, political insecurity and humanitarian emergencies in the East Africa region have given these issues greater significance.


Participants also discussed how to address the persistence of trachoma in some districts and ways to foster more multisectoral engagement from the water, sanitation, and hygiene; education; and domestic financing sectors. Government representatives discussed opportunities to conduct cross-border activities that could benefit communities that move across national frontiers. The meeting demonstrated the trachoma community understands that disease transcends country borders and control efforts require a regional approach. **E**

Carter Center Experts Present at Annual Conferences

For the first time in several years due to COVID-19 restrictions, annual meetings of the Neglected Tropical Disease NGO Network (NNN) and the American Society of Tropical Medicine and Hygiene (ASTMH) convened in person. These conferences give Carter Center rep-

conference’s opening plenary session, and Carter Center experts served on three panels focused on Guinea worm disease eradication, mental health and its intersection with neglected tropical diseases, and approaches to controlling neglected tropical diseases in hard-to-reach conflict zones.

the efficiency of resources and operations, sustainability, and community acceptance. Gregory Noland, director of the Carter Center’s river blindness, lymphatic filariasis, schistosomiasis, and malaria programs, sat on the panel and spoke about integrated interventions for neglected tropical diseases and lessons learned.

Similarly, Adam Weiss, director of the Guinea Worm Eradication Program, and his colleagues presented a symposium focused on research innovations supporting the eradication of Guinea worm disease. Another symposium highlighted the Center’s efforts to provide much-needed health services in conflict zones. Carter Center panelists included Dr. Kashef Ijaz, vice president of health programs; Stacia George, director of the Conflict Resolution Program; Angelia Sanders, associate director of the Trachoma Control Program; and Boukary Sangaré, field coordinator for the Mali Peace Through Health initiative. 



Carter Center staff attended the 2022 American Society of Tropical Medicine and Hygiene meeting in Seattle, Washington.

representatives the opportunity to share research, milestones, and challenges with their peers and partners.

In September 2022, a group of Carter Center staff members traveled to Kathmandu, Nepal, for the 13th annual NNN Conference. As a platinum sponsor of the event, The Carter Center was prominently featured and recognized as a leader in neglected tropical disease intervention and for its cross-cutting work in mental health and peacekeeping. Dr. Kashef Ijaz, the Center’s vice president of health programs, made remarks and introduced a promotional video during the

In late October, a Carter Center delegation traveled to Seattle, Washington, for the annual meeting of the American Society of Tropical Medicine and Hygiene. Carter Center representatives gave 24 presentations at the meeting, including four oral presentations, 16 posters, and four symposia showcasing each of the Center’s six neglected tropical disease programs.

A symposium, sponsored by the Global Institute for Disease Elimination, convened a panel of experts to discuss the importance of cross-program integration to increase

Guinea Worm Disease Update

Human Cases by Year

	2021	2022*
Chad	8	6
South Sudan	4	5
Mali	2	0
Ethiopia	1	1
Central African Republic	0	1**

*Provisional

**Case origin under investigation

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