Summary Proceedings

Twenty-Second Annual Trachoma Control Program Review

The Power of Partnership: Achieving Success with Compassion

THE
CARTER CENTER

Waging Peace. Fighting Disease. Building Hope.

Atlanta, Georgia

March 22-23, 2021

Acknowledgments

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And to many others who may not be listed, our sincere gratitude.

Acknowledging The Power of Partnership

The Carter Center's Trachoma Control Program celebrated another year of achievements despite the many challenges brought forth by the coronavirus disease 2019 (COVID-19) global pandemic. Through the power of partnership, compassion, and resilience, we assisted in providing life-altering surgeries, mass drug administration (MDA), and community health education across Ethiopia, Mali, Niger, South Sudan, and Sudan. The Carter Center is proud to assist, in partnership, the most mature and long-standing trachoma programs worldwide. These programs have historically been the largest of their type, contributing to some of the most outstanding global SAFE (Surgery, Antibiotics, Facial cleanliness, and Environmental improvement) outputs annually and cumulatively. In the World Health Organization (WHO) Weekly Epidemiological Record, published 24 July 2020, global 2019 data showed The Carter Center's Trachoma Control Program assisted in 15.7% of the worldwide output of MDA and 24% of all trachomatous trichiasis (TT) surgeries performed. Additionally, 44% of all surgeries worldwide were conducted in Ethiopia, with The Carter Center assisting 39% of all TT surgeries in Ethiopia.

The Power of Partnership starts with those we serve and those we collaborate most closely with, specifically the communities and the ministeries of health in each country. The Carter Center has been in partnership since 1999 in Mali, Niger, and Sudan; and since 2001 in Ethiopia and South Sudan. The community and ministerial partnerships form the foundational elements of our collective achievements and serve as powerful bonds to work together towards our common goals to eliminate trachoma as a public health problem as well as 'build hope'. Since 1999, The Carter Center's Trachoma Control Program, in partnership with those we serve, has provided TT surgeries to 859,376 persons and assisted in the distribution of more than 210 million doses of antibiotics. The Center's partnerships have also contributed to health education programs and activities in more than 85,000 schools within more than 90,000 communities. These outcomes reflect a tremendous cumulative success as the Carter Center-assisted countries, through the Power of Partnership, edge closer to achieving elimination thresholds.

The Carter Center's work and the achievements of the parternships would not be possible year after year without the critical support and committed advocacy of additional partners, such as the generosity and enthusiasm of donors, including Pfizer Inc., Conrad N. Hilton Foundation, Lions Clubs International Foundation, Noor Dubai Foundation, Alwaleed Philanthropies, The OPEC Fund for International Development, Abbott, Manaaki Foundation, Crown Agents/ASCEND, Bill & Melinda Gates Foundation, Margaret A. Cargill Philanthropies, The END Fund, The John and Kathleen Schreiber Foundation, The William H. Donner Foundation, Inc., and many others. Moreover, we would also like to acknowledge and thank our crucial and dedicated academic partners who continue to support academic research and laboratory work to advance the Center's mission to control the world's leading cause of infectious blindness.

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Acronyms

ARHB	Amhara Regional Health Bureau
ARRET	Azithromycin Reduction to Reach Elimination of Trachoma
AVENIR	Azithromycine Pour la Vie Des Enfants au Niger - Implémentation et Recherche (Azithromycin For the Lives of Children in Niger - Implementation and Research)
CDC	Centers for Disease Control and Prevention
COVID-19	Coronavirus Disease 2019
Ct	*Chlamydia trachomatis*
DBS	Dried blood spots
ESPEN	Expanded Special Project for Elimination of Neglected Tropical Diseases
FCDO	United Kingdom Foreign, Commonwealth, and Development Office
FMOH	Federal Ministry of Health
GET2020 Alliance	WHO Alliance for the Global Elimination of Trachoma by 2020
GSM4	WHO Fourth Global Scientific Meeting
GTMP	Global Trachoma Mapping Project
GWEP	Guinea Worm Eradication Program
HCEC	Health Campaign Effectiveness Coalition
ICTC	International Coalition for Trachoma Control
IECW	Integrated Eye Care Worker
ITI	International Trachoma Initiative
MDA	Mass Drug Administration
MOH	Ministry of Health
NGO	Non-Governmental Organization
NNN	NTD NGO Network
NTD	Neglected Tropical Diseases
NTDSC	Neglected Tropical Diseases Support Center
NTTF	National Trachoma Task Force
PC-NTDs	Preventive Chemotherapy – Neglected Tropical Diseases
PESS	Post-Elimination Surveillance Survey
PNLC	Programme National de Lutte contre la Cecité (National Blindness Prevention Program)
PNSO	Programme National de Santé Oculaire (National Eye Health Program)
PPE	Personal Protective Equipment
RAMA	Risk Assessment and Mitigation Action
SAFE	Surgery (S), Antibiotics (A), Facial Cleanliness (F), and Environmental Improvement (E)
SLR	Single-Lens Reflex
SOP	Standard Operations Procedures
STP	School Trachoma Program
TAP	Trachoma Action Plan
TEO	Tetracycline Eye Ointment
TFGH	The Task Force for Global Health
TIS	Trachoma Impact Surveys
TSS	Trachoma Surveillance Surveys
TF	Trachomatous Inflammation-Follicular
TI	Trachomatous Inflammation-Intense
TT	Trachomatous Trichiasis
UNICEF	United Nations Children's Fund (formerly United Nations Children's Education Fund)
WASH	Water, Sanitation, and Hygiene
WGS	Whole Genomic Sequencing
WHA	World Health Assembly
WHO	World Health Organization

Executive Summary

The 22nd Annual Trachoma Control Program Review was held as a virtual conference from March 22-23, 2021, due to the global COVID-19 pandemic. To celebrate the partnership and resilience through this trying period worldwide, the theme of this year's review was "The Power of Partnership: Achieving Success with Compassion." Attending this year's review were representatives from the Ministries of Health and Carter Center offices in the five countries where the Center currently provides assistance: Ethiopia, Mali, Niger, South Sudan, and Sudan. Partners and donors in attendance included representatives from Abbott, CBM International, Crown Agents, Emory University, The END Fund, FHI360, The John and Kathleen Schreiber Foundation, Johns Hopkins University, Health and Effectiveness Coalition, Helen Keller International, Conrad N. Hilton Foundation, International Coalition for Trachoma Control (ICTC), International Trachoma Initiative (ITI), Lions Clubs International Foundation, London School of Hygiene and Tropical Medicine, Noor Dubai Foundation, Neglected Tropical Diseases Support Center (NTDSC), Pfizer Inc., The Francis I. Proctor Foundation at the University of California at San Francisco, Rollins School of Public Health at Emory University, RTI International, Sightsavers, The Task Force for Global Health (TFGH), University of California – Los Angeles, University of North Carolina – Chapel Hill, University of Pennsylvania, United Nations Children's Fund (UNICEF), U.S. Agency for International Development, U.S. Centers for Disease Control and Prevention (CDC), and WHO.

In keeping tradition with past program reviews, the 2021 program review provided an opportunity to assess the status of each national program and discuss the progress toward meeting the elimination of trachoma as a public health problem. On April 1, 2020, due to COVID-19, the WHO issued guidance that limited SAFE programmatic activities at the community level. On July 27, 2020, the WHO issues further guidance for the resumption of community activities, noting special precautions to decrease the risk of transmission of COVID-19. Additionally, different limitations were in place in each country, which understandably limited activities. With the assistance of partners like The Carter Center, the national programs developed and implemented a risk assessment and mitigation action (RAMA) tool and new standard operations procedures (SOP) to assess and mitigate risks and prepare for the safe resumption of programmatic activities. During the suspension of mass campaign activities, the Center supported ministries of health in select COVID-19 response activities. In Ethiopia, the Center provided logistical support for the COVID-19 Taskforce and assisted the Amhara Regional Health Bureau (ARHB) in the distribution of COVID-19 related supplies. In Niger, The Carter Center supported the National Program to pivot trachoma health education messaging via radio broadcasts to COVID-19 prevention messages, as well as provided the Program and regional directorates personal protective equipment (PPE), hand sanitizers and sanitizing equipment, handwashing stations, and soap. In South Sudan and Sudan, The Carter Center assisted in distributing supplies, developing communication materials, and adapting health messages to integrate hygiene and preventive COVID-19 messages into trachoma and Guinea worm communications.

Despite COVID-19, the Carter Center-assisted Programs were highly productive. In 2020, a total of 8,274 TT surgeries were conducted, 68.5% of which were provided to women; more than 700,000 doses of antibiotics were distributed, and F&E interventions continued in communities and schools. In the Amhara region in Ethiopia, 32 prevalence surveys were conducted in 2020, results of which show significant progress toward elimination since 2015. The Mali National Program continues to edge closer to completing all necessary activities to finalize their elimination dossier. The Niger National Program follows closely behind, with just over 6,000 estimated TT cases remaining at the end of 2020 and 15 districts ready for impact surveys. In South Sudan, all five MDAs planned for 2020 were completed, three of which were the fifth of five needed rounds. In Sudan, a second required round of MDA and a second surgical campaign were completed in South Sudanese refugee camps. In 2020, the Neglected Tropical Diseases (NTD) Non-Governmental Organization (NGO)

Network Conflict and Humanitarian Emergency Cross-Cutting Group, with significant Carter Center support, utilized the experiences of Sudan to develop a Resource Guide for Conflict and Humanitarian Emergencies.

The two-day review focused on successes in the face of a year of adversities. The Program Review opened with The Carter Center's Board Chair, Mr. Jason Carter, Chief Executive Officer, Ms. Paige Alexander, and Vice President of Health Programs, Dr. Kashef Ijaz welcoming the participants, leading the participants in a moment of silence, and conveying goodwill. The moment of silence acknowledged our collective human trauma of the past year not only due to the COVID-19 global pandemic but also the pandemic of systemic racial injustice in the United States of America and issues of inequity across the globe. This compassionate recognition of the difficulties of the past year was followed by another goodwill message from Dr. Tedros Adhanom Ghebreyesus, Director-General of the WHO.

In her opening remarks, Ms. Kelly Callahan, The Carter Center's Trachoma Control Program Director, referenced a quote by President Carter, "We must adjust to changing times and still hold to unchanging principles." Although 2020 was a time of substantial change, our principles of hope, compassion, and interconnectedness have not changed. We must compassionately see ourselves in each other and stay focused on eliminating trachoma as a worldwide public health problem. The Carter Center and its partners have seen incredible successes and have shared as well as learned much from each other throughout the years. As such, The Carter Center remains proud and honored to assist the ministries of health on the road toward trachoma elimination as a public health problem and will continue to support this crucial work in the years to come. It has been a challenging year globally, and although the years to come might still present further difficulties, we must fight adversity together with compassion and hope for a better future.

Ms. Callahan marked the loss of two "trachoma giants" in 2020 during her presentation. Dr. Julius Schachter, known as "Julie," died on December 20, 2020. Dr. Schachter was a microbiologist and dedicated his career of 55 years to the control of trachoma. He is credited for making the leap to consider treating the entire community, whether they were infected with trachoma or not – and thus, in some minds, established the practice of MDA. He was an ardent supporter of the global elimination of trachoma as a public health problem and was the one and only keynote speaker in 21 years of Trachoma Control Program Reviews. Ms. Callahan noted she would fondly remember his unabashed joy, passion, and dedication; he exemplified unchanging principles in his and our work. May his soul rest in the success of our collective efforts. On February 20, 2021, we lost The Honorable World Laureate Lion, Dr. Tebebe Yemane Berhan. Dr. Tebebe was not only one of the loudest voices in the fight to eliminate trachoma as a public health problem but one of the most active "doers" in the fight as well. Ms. Callahan noted she could say so many things to express her personal and the collective grief in the loss of a leader, an advocate, friend, partner, and mentor; however, she preferred the words of President Carter: "my faith demands that I do whatever I can, wherever I can, whenever I can, for as long as I can, with whatever I have to try to make a difference." Lion Dr. Tebebe embodied this way of life to the fullest – he did whatever he could, whenever he could, with whatever he had to make a difference, to improve lives, and to end suffering. Lion Dr. Tebebe gave all he had to the fullest. May his soul rest in peace, knowing he made a difference.

Ms. Callahan was followed by Ms. Kenya Casey, The Carter Center's Overseas Operations Senior Associate Director, leading all participants in guided mindfulness meditation. The trauma of the past year and our need for collective compassion made a mindful mediation to open the Program Review necessary. It offered the participants a moment to reflect on the power of partnership and a moment to celebrate the joys of our collective success.

Dr. Mwelecele Ntuli Malecela, NTD Director, Department of Control of NTDs, WHO, presented an overview on "*Ending The Neglect To Attain The Sustainable Development Goals*: *A Road Map For Neglected Tropical Diseases 2021–2030*". This strategic document and advocacy tool is focused on strengthening the programmatic responses to

NTDs through shared goals and disease-specific targets. Dr. Malecela also gave a brief update on the current COVID-19 situation.

The Program Review then included a series of presentations over the two-day period highlighting the status, successes, and challenges in the five Carter Center-assisted countries, including a focus on the Amhara region of Ethiopia. The country-specific presentations were interspersed with multiple presentations illustrating how The Carter Center and partners remain resolute in mitigating country-specific and global program challenges. Dr. Jeremiah Ngondi of RTI International, Dr. Harry Pickering of the University of California – Los Angeles, and Carter Center Trachoma Control Program Epidemiologist, Dr. Scott Nash, presented a combined focus on 'persistent' trachoma findings and the need to use the existing SAFE strategy coupled with data-driven enhancements and adaptations to improve and accelerate trachoma elimination. Dr. Angelia Sanders presented an innovative approach using social marketing in a qualitative face washing study in South Sudan. Dr. Jeremy Keenan of Francis I. Proctor Foundation presented some results of the ongoing Amhara region study focused on the impact of water, sanitation, and hygiene (WASH) on trachoma. The results were not encouraging towards improved WASH in the short-to-medium-term. The participants were, however, left hopeful that with more time, the longer-term results will show improved outcomes towards trachoma elimination.

Dr. Kristin Saarlas, Director of the Health Campaign Effectiveness Coalition of TFGH, gave the participants an overview of the work of the Coalition and opportunities to engage. This was followed by Dr. Fahd Naufal of Johns Hopkins University and Ms. Cassidy Whitson, former Carter Center Trachoma Control Program student intern and now of the CDC, providing a combined session on the use of photography in the global trachoma program. Ms. Julie Jenson, Director of Corporate Social Responsibility of Pfizer Inc., provided an update on the status of Pfizer's ongoing commitment to the global trachoma elimination program. This was followed by Dr. Paul Emerson of the ITI of TFGH providing an update as to the global status of the donation program and ITI's commitment to improving processes and responding to the immediate needs of the programs. Mr. Scott McPherson of RTI International and the outgoing Chair of ICTC rounded out the updates with a presentation focused on current membership and strategic planning goals. Mr. McPherson noted the ICTC strategic alignment with the NTD Road Map presented by Dr. Malecela of WHO.

Dr. David Addiss, Director of the Focus Area for Compassion and Ethics of TFGH, made an impassioned presentation on the importance of compassion and ethics within global public health. Dr. Addiss used President Carter as an example of the use of compassion in all our affairs. This presentation aligned beautifully with the Program Review theme and provided a well-rounded perspective on the use of compassion, especially in partnership. Dr. Kashef Ijaz provided a focused summary on the Program Review and the success exemplified through the Power of our Partnership. Dr. Ijaz closed the 2021 Program Review and bid participants continued success in the fight to eliminate trachoma as a public health problem.

SAFE in Ethiopia

Presented by Mr. Fikre Seife, National Neglected Tropical Diseases (NTD) Program Coordinator, Ministry of Health (MOH) – Ethiopia

Background

The National Survey on Blindness, Low Vision, and Trachoma conducted in 2006 revealed that 2.8 million people in Ethiopia had low vision, and 1.2 million people were blind. It was estimated that 87% of blindness was from avoidable diseases. The survey revealed that active trachoma was endemic in virtually all country regions, with more than 1.3 million people living with TT. Current estimates show that 50% of the world's trachoma burden is found in Ethiopia.

Ethiopia has shown great dedication to addressing the trachoma burden in the country, among other NTDs. The Fast Track Initiative, launched in 2015, aimed to clear the TT backlog across Ethiopia, and since its inception 628,484 TT cases have been managed. The Ethiopia NTD Master Plan was first launched in 2013, subsequently updated in 2016, and most recently revised in 2020 with an increased focus on the integration of WASH and NTD programming through the promotion of sector coordination, capacity building, and improving WASH-NTD strategies and tools. The National Program continues to be dedicated to eliminating trachoma as a public health problem by 2030.

Major Milestones in Ethiopia's Trachoma Elimination Program

2001: National Steering Committee established
2002: Azithromycin was registered in the country
2003: Trachoma Control Program launched SAFE interventions in three districts
2006: National Survey on Blindness, Low Vision, and Trachoma conducted
2007-2010: Trachoma baseline mapping conducted in the Amhara Regional State
2013-2014: Global Trachoma Mapping Project (GTMP) completed in 672 districts (locally called woredas)
2014: Scale-up of Trachoma Elimination Program
2015: Fast Track Initiative launched by the Ministry of Health (MOH) to clear TT surgery backlog
2020: Impact survey showed 192 districts fell below 5% trachomatous inflammation-follicular (TF) and stopped MDA activities

Surgery (S)

As of 2020, 115 previously endemic districts in Ethiopia have achieved the threshold for the elimination of TT as a public health problem (prevalence of TT <0.2%, unknown to the health system, in individuals 15 years and above). The remaining 600 districts continue to be endemic for TT, with an estimated 319,000 TT cases to operate to achieve the elimination threshold. In 2020, 20,961 people received TT surgery in Ethiopia, bringing the total number of TT surgeries conducted since the Fast Track TT initiative launched in 2015 to 628,484. These efforts to clear the surgery backlog in Ethiopia have shown great impact; from 2015 to 2020, the national estimated TT prevalence drastically reduced from 4% to 0.82%.

Antibiotic Therapy (A)

The TF prevalence has shown a great downward trend toward the threshold for the elimination of trachoma as a health problem. Baseline estimates showed that 341 districts had a TF prevalence of ≥30% (considered hyperendemic), and only 58 districts were found to be below the 5% elimination threshold. In 2020 only 206 districts had a TF prevalence of ≥30% and 250 were found to be below the 5% elimination threshold. From 2015 to 2020, the mean national estimated TF prevalence dropped from 26.6% to 13.3%. The number of antibiotic doses distributed in Ethiopia has significantly increased over time; since 2010, 361 million doses have been distributed. However, due to the global COVID-19 pandemic, in 2020, MDA was completed in only two

regions: Southern Nations, Nationalities, and Peoples' and Somali; the estimated ten million doses distributed in 120 districts constituted 16.1% of the expected geographic coverage in 2020. Despite the challenges the program faced, the districts are showing progress; based on the most recent impact surveys conducted in 2020, a total of 135 districts are no longer hyperendemic, and more than 190 districts have fallen below the 5% TF prevalence threshold, no longer requiring MDA.

Facial Cleanliness (F) & Environmental Improvement (E)

The National Program continues to remain focused on F&E as part of its NTD program and has enhanced its focus through each of the three NTD Master Plans from 2013 to 2021. In 2021, the most current NTD Master Plan was devised to clearly articulate the relevance of WASH-NTD integration, promote sector coordination toward a common goal, and improve the utilization of WASH-NTD strategies and tools. To support these efforts, the MOH of Ethiopia has developed a set of toolkits and guidelines for the implementation of the WASH-NTD strategies: *Woreda Level Coordination Toolkit for WASH and NTD Sectors* and *Health Communication Message Guide*. These documents are important tools for decision-making and technical implementation at regional, zonal, and district levels.

The Program plans to increase engagement and collaboration with WASH partners; technical working groups have been established at the national and regional levels. The working groups work to bring together WASH and NTD partners to have an even greater impact on trachoma throughout Ethiopia. Additionally, the National Program published a landscape analysis that works on mapping where WASH and NTD partners are operating throughout the country. The purpose of the landscape analysis is to create a framework of program quality standards to achieve national and international targets, facilitate coordination and integration, and enhance the targeted WASH interventions to improve health outcomes. Mapping will continue to look at access to water and other indicators that could impact how effective WASH activities may be on eliminating trachoma and other NTDs. The National Program's priority is to make the WASH-NTD coordination a standard operation for all stakeholders and support them in the implementation process.

COVID-19 Impact and Mitigation Measures

The global COVID-19 pandemic greatly impacted the National Trachoma Program; suspension of activities resulted in delays and decreased outputs of MDA, surveys, and surgery. In response to the pandemic, the MOH, in collaboration with partners and stakeholders, developed a risk assessment checklist and mitigation tool to reduce the risk of COVID-19 transmission during implementation. Additionally, SOP were developed for all outreach activities (MDA, surveys, and TT surgical training and outreach). To mitigate the risk associated with COVID-19 transmission, MDA will shift modalities from the community-based approach to house-to-house; these activities will take longer to complete, increasing the operational costs related to MDA. Further, the procurement of PPE and the longer drug storage, due to the delay in MDA will result in increased programmatic expenses and a lack of available storage space in central national warehouses.

Programmatic Challenges

In addition to the impact of COVID-19 on national activities, the Program faced several additional challenges in 2020:

- There remains a high number of estimated TT cases unknown to the national health system as well as an estimated 15% post-operative TT, according to 2020 survey results.
- Current quality assurance systems are weak, and post-operative follow-up for TT surgeries is challenging in all regions.
- In some areas, the Program has poor integration of TT surgical services into the primary healthcare service due to a lack of TT surgical kits and a high turnover of integrated eye care workers (IECWs) at

health centers.

- Some districts are struggling to achieve (or stay below) the 5% elimination threshold for TF—45% of the districts at surveillance survey have come back above the elimination threshold.

Ethiopia – TF Prevalence: Children 1-9 years

2015

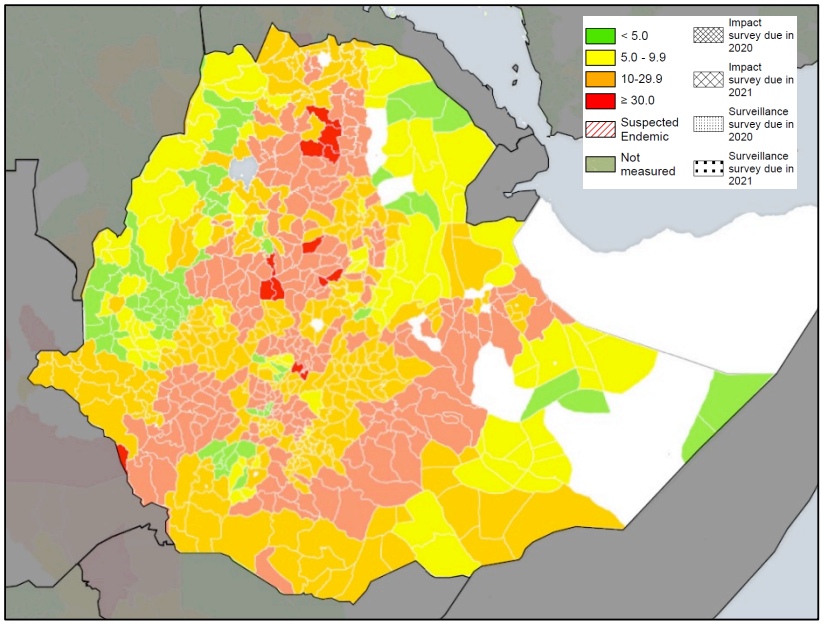


Figure 1 – Estimated prevalence of TF in 2015: 26.6%

2020

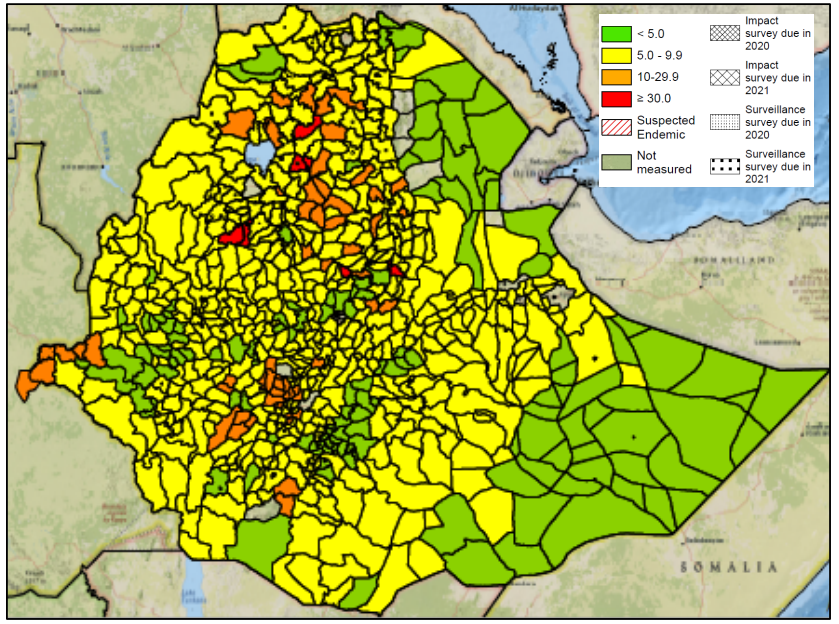


Figure 2 – Estimated prevalence of TF in 2020: 13.3%

Ethiopia – TT Prevalence: Adults ≥ 15 years

2015

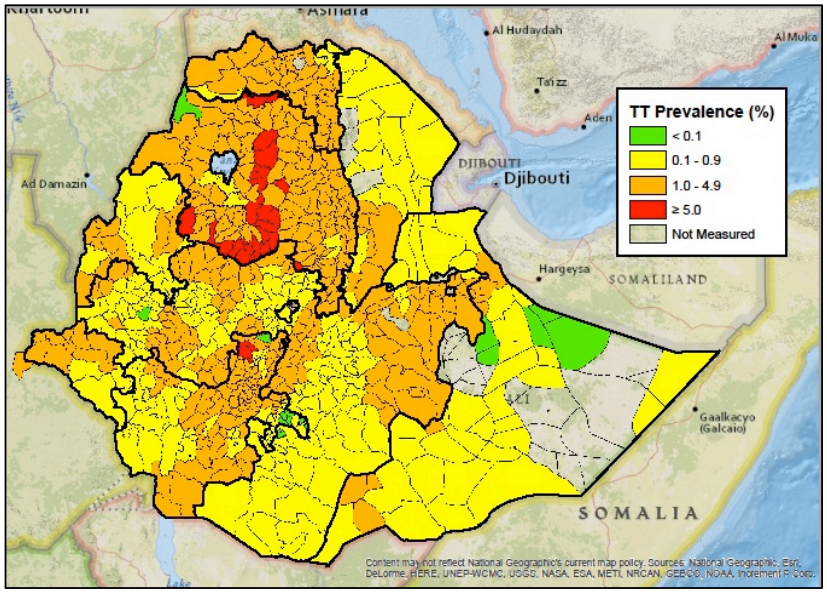


Figure 3 – Estimated prevalence of TT in 2015: 4%

2020

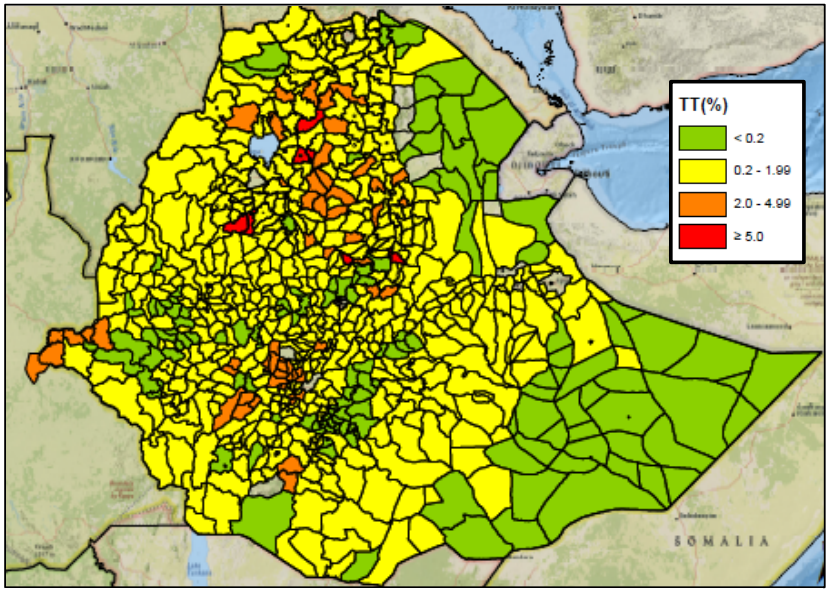


Figure 4 – Estimated prevalence of TT in 2020: 0.82%

SAFE in Amhara, Ethiopia

Presented by Dr. Hiwot Debebe, Deputy Head, Amhara Regional Health Bureau (AHRB)

Background

In the Amhara region of Ethiopia, a trachoma prevalence survey at the zonal level was conducted in 2007 to quantify the zonal prevalence of active trachoma and TT; based on the results, all zones in the Amhara region were eligible for the full SAFE strategy and an estimated 643,904 people required surgery to correct TT. Since 2001, the ARHB has been working with The Carter Center to implement the full SAFE strategy, completing more than 715,000 surgeries and distributing more than 186 million doses of antibiotics.

As of March 2020, 48 out of 166 districts in the Amhara region reached the elimination threshold for TF and are exempt from MDA. Unfortunately, due to the COVID-19 pandemic, the regional trachoma program could not conduct MDA activities in 2020. However, after conducting the appropriate risk assessments, the ARHB developed new SOP that will continue to enable the resumption of SAFE activities. The Program remains focused on reaching the elimination of trachoma as a public health problem by intensifying TT outreach, better understanding the remaining backlog, and assessing alternative strategies for persistent districts.

Table 1. Program Achievements in 2020

Indicator	Goal	Amhara Region (Carter Center-Assisted)	
		Target	Achieved
# of persons operated	158,042	33,872	7,132 (21%)
# of women operated			4,869 (68%)
# of surgeons trained		23	12 (52%)
Doses of Zithromax® distributed during MDA	15,310,025	15,310,025	-
Doses of tetracycline distributed during MDA*	312,449	312,449	-
# of villages with health education		3,447	3,447 (100%)
% improved latrine coverage		44%	36.3%

**Due to the COVID-19 pandemic, no MDA was conducted in the calendar year 2020. MDA in Amhara will be conducted in early 2021 and, if completed by June 2021, will be counted against the program year 2020.*

Surgery (S)

In 2020, 7,132 people received TT surgery across the Amhara region; of those operated, 4,869 (68%) were women. Since the beginning of the program in 2001, 715,259 TT surgeries have been conducted in Amhara. Baseline surveys completed in 2007 showed an estimated backlog of more than 600,000 TT cases to operate to reach the elimination target. As of the end of 2020, it is estimated that 150,441 individuals require TT surgical services to clear the backlog. Although limited surgeries were completed in 2020, as a result of the suspension of activities due to COVID-19, surgical outreach activities restarted in November 2020. Additionally, the program was also able to support the training of 12 new TT surgeons, known locally as IECWs, and retraining of 24 existing IECWs who will help continue the work to clear the TT backlog in Amhara.

Antibiotic Therapy (A)

By the end of 2020, 48 of the 166 districts in the Amhara region, with an estimated population of 4,782,895, have achieved the elimination target for TF and no longer require MDA; this includes 33 districts that remained below the elimination threshold at surveillance survey. This achievement shows great progress throughout the region compared to just five years prior, when only nine districts were below 5% TF. For the 118 districts with

TF greater than 5%, MDA activities could not be completed in 2020 due to the global COVID-19 pandemic. MDA activities will resume in 2021, and the Amhara region aims to "catch up" from the delay by conducting two rounds of MDA, where possible, in 2021. To mitigate the risk of COVID-19 transmission during MDA, SOP have been developed for MDA implementation, which will be completed using a house-to-house strategy rather than the standard community-based, central point distribution modality.

Despite the delays due to COVID-19, the Program completed surveys in 32 districts in 2020. Of the completed surveys, nine were trachoma surveillance surveys (TSS). The results of the TSS highlighted a challenge that has been observed in Amhara as well as throughout Ethiopia—of the nine surveyed districts, only two remained below the 5% threshold, with the remaining seven districts coming back above the 5% TF threshold, which would result in re-enrollment in MDA. More work is needed to better understand these districts and determine if the results from TSS show true recrudescence or if this could just be related to statistical variability.

Facial Cleanliness (F) & Environmental Improvement (E)

In 2020, the program remained focused on implementing F&E activities through health education activities in the community and in schools. A total of 3,447 villages received health education in 2020, and the School Trachoma Program (STP) was implemented in 8,741 schools. In January and February 2020, 8,029 teachers and principals were trained in West Amhara, training activities that had remained from 2019, when East Amhara teachers and principals were trained. Due to the success of the STP in primary schools, the ARHB and The Carter Center, in collaboration with the Amhara Bureau of Education, are developing a pre-school level curriculum, which will be implemented in 2021.

COVID-19 Impact and Mitigation Measures

As a result of the COVID-19 pandemic, most program activities were suspended in April 2020 and began resuming implementation in October/November 2020. In an effort to mitigate the risk of COVID-19 transmission during outreach activities, the ARHB implemented a RAMA tool before each activity and developed SOP for each of the outreach activities (MDA, surveys, TT case finding, and surgery). During outreach, risk mitigation strategies included daily temperature checks for outreach teams, consistent use of PPE, and COVID-19 screening questions before eye exams. As a result of the new risk mitigation strategies, which also included limiting vehicle capacity during outreach to allow for social distancing and the change in MDA modality, programmatic costs will increase.

Programmatic Challenges

In addition to COVID-19 related challenges, insecurity in some parts of the region affected program implementation and caused the internal displacement of the population. Additionally, the high rate of districts returning with TF prevalence above the 5% threshold at surveillance survey, and thus must be re-enrolled in MDA activities, greatly impacts the Program; alternative strategies to address these districts may need to be considered.

Program Plans for 2021

Surgery (S)

- Operate 30,532 TT cases
- Train 28 new IECWs
- Retrain 88 IECWs

Antibiotic Therapy (A)

- Distribute 22,484,131 doses of Zithromax®
- Distribute 454,772 doses of tetracycline eye ointment (TEO)

Facial Cleanliness (F) & *Environmental Improvement (E)*

- Conduct health education in 3,447 villages
- Implement and supervise the STP in primary schools

Surveys

- Conduct 70 trachoma impact surveys (TIS) and eight TSS

Amhara, Ethiopia – TT Prevalence: Adults ≥ 15 years

2015

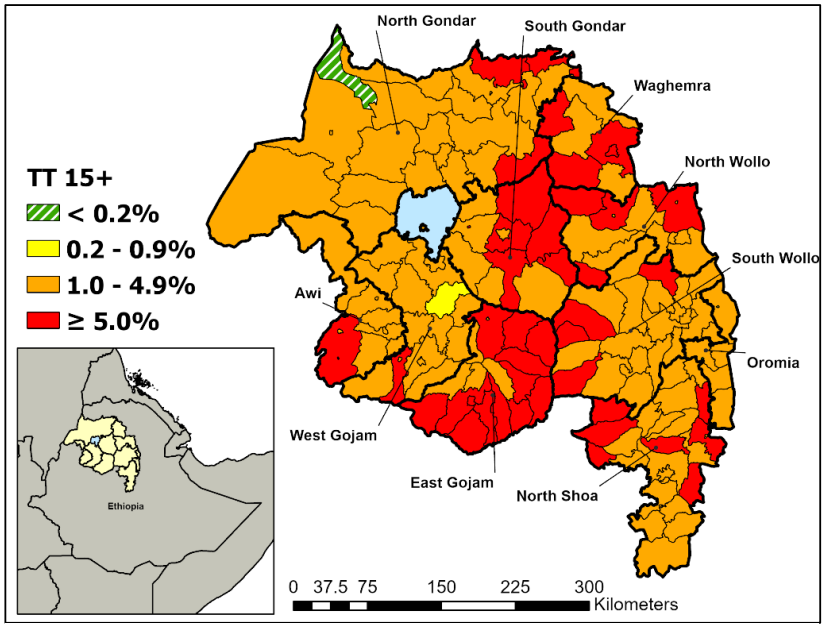


Figure 1

2020

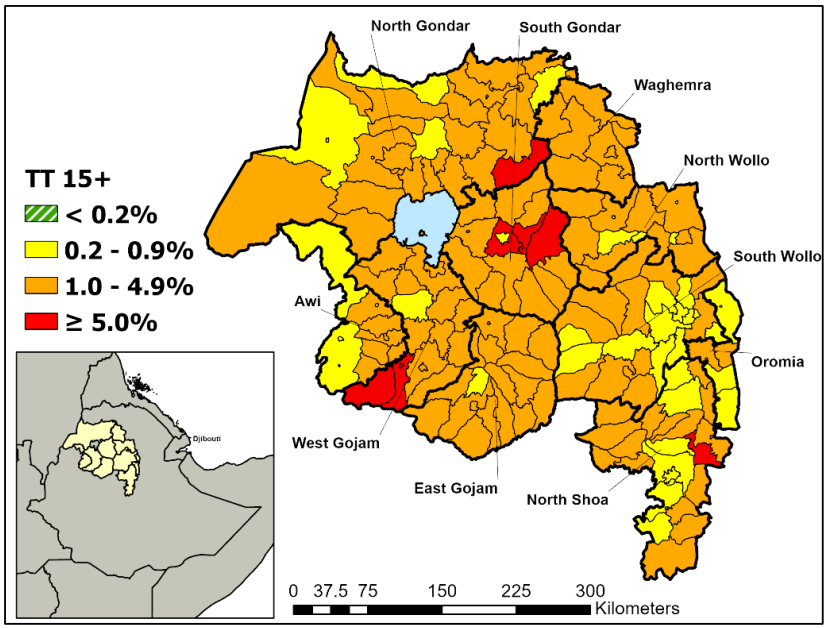


Figure 2

Amhara, Ethiopia – TF Prevalence: Children 1-9 years

2015

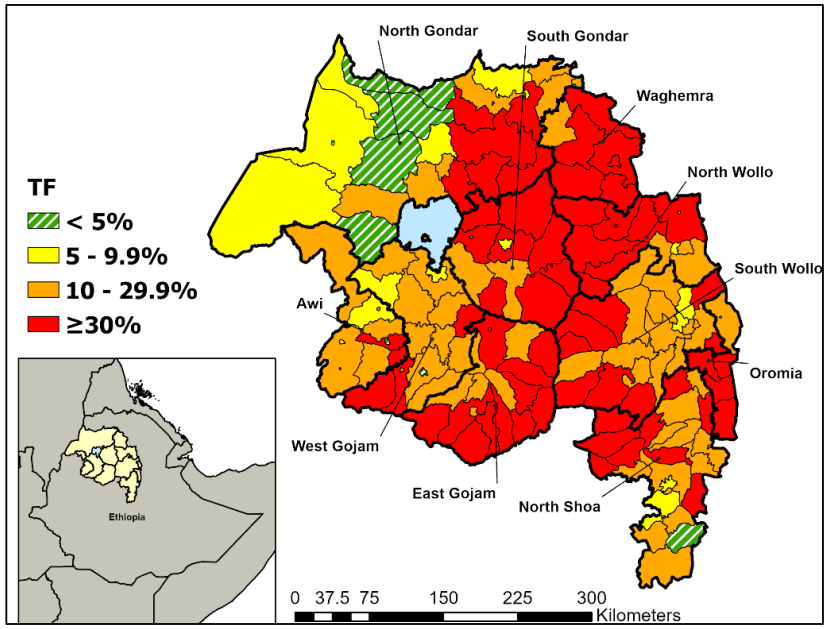


Figure 3

2020

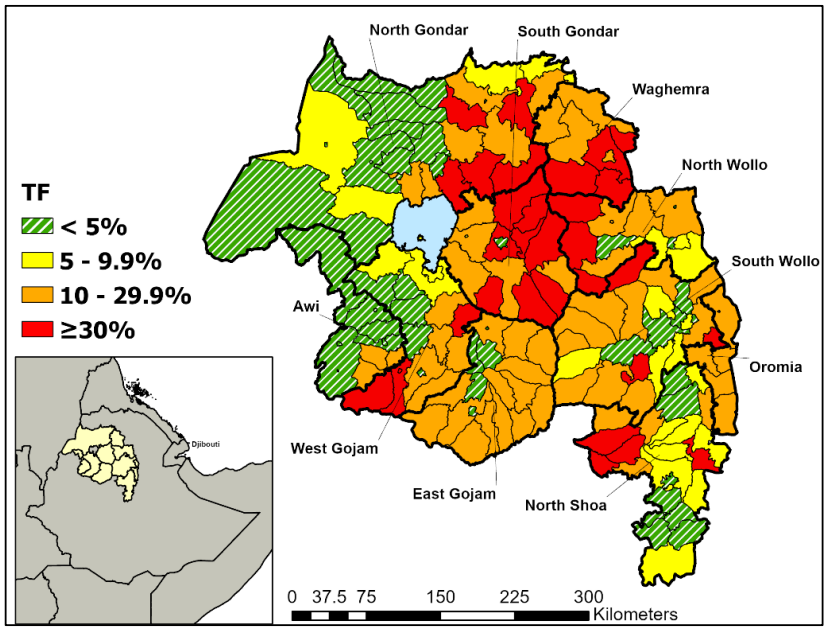


Figure 4

Amhara, Ethiopia – MDA Plans, 2021

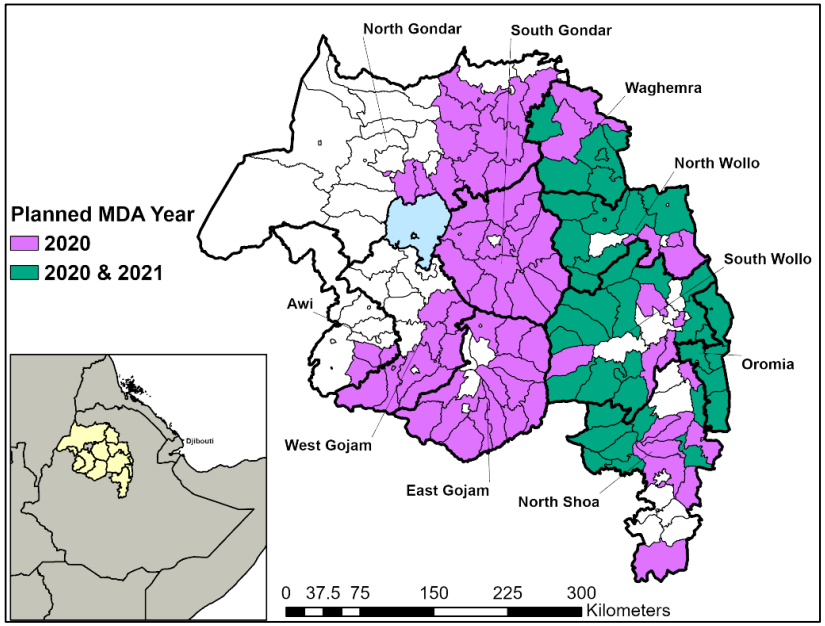


Figure 5 – The map for 2021 planned MDA activities include MDA originally planned for 2020 and MDA originally planned for 2021. If required and timing permits, two rounds of MDA will be conducted in calendar year 2021 to catch up from the delays resulting from COVID-19.

Amhara, Ethiopia – Survey Plans, 2021

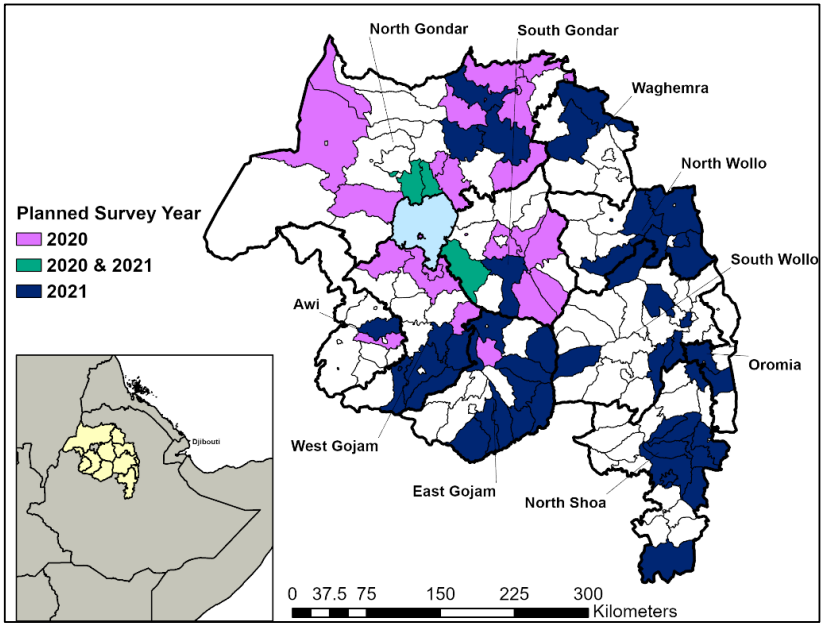


Figure 6 – The map for 2021 planned survey activities include surveys originally planned for 2020 and surveys originally planned for 2021. If required and timing permits, two surveys will be conductea in calendar year 2021 to catch up from the delays resulting from COVID-19. To create the projections, it was assumed that districts would decrease by one prevalence category at each survey round—for those districts with TF prevalence of 10-29.9% prior to survey, it was assumed they would return a result oj 5-9.9% TF, resulting in one more round of MDA followed by another TIS.

Destination Elimination, 20 Years of Trachoma Programming in Mali

Presented by Professor Lamine Traoré, National Coordinator, Programme National de Santé Oculaire (PNSO), Ministry of Health (MOH) – Mali

Background

Following prevalence surveys conducted in 1996-1997, trachoma was identified as a major public health issue in Mali, including an estimated 85,000 persons with TT that required surgery. The Programme National de Santé Oculaire (PNSO) established the national trachoma control program in 1999 and initiated TT surgical services to address this issue. Two years later, in 2001, MDA activities commenced in Mali, followed by F&E activities in 2003. By the end of 2016, all districts in Mali had reached the elimination threshold for TF, and no further MDA was required. As a result, Mali now must only achieve the threshold for the elimination of TT as a public health problem; by 2020, only five districts remain, with an estimated 597 TT cases to achieve this goal. The National Program has made tremendous progress since 1999 and hopes to achieve elimination in 2021. However, insecurity remains the greatest challenge and limits the Program's access to districts with the remaining TT patients.

Key Milestones and Progress toward Elimination

1996-1997: National baseline prevalence survey
1999: National Trachoma Control Program launched
2003-2005: Facial cleanliness and Environmental improvement activities initiated
2005-2020: Impact and surveillance surveys conducted
2014-2019: National Program adopts the *ratissage* strategy as TT case management policy
2018: Creation of the Dossier Committee
2020: Transition planning activities in place
2021: Target date for elimination of trachoma in Mali

Table 1. Program Achievements, 1999-2020

Indicator	National Program	Carter Center-Assisted
# of persons operated	**89,533**	**30,983***
# of women operated	**53,731**	**18,595****
# of surgeons trained	**179**	**30**
# of surgeons retrained	**105**	**20**
Doses of Zithromax® distributed during MDA	**29,126,964**	**698,083**
Doses of tetracycline distributed during MDA	**582,539**	**120,795**
# of villages with health education	**7,576**	**3,959**
# of household latrines built	**155,686**	**117,086**
# masons trained		**7,775**

*Support began in 2008
**The Carter Center started reporting on the number of women operated in 2012

Reaching Elimination over Time

The National Program has made tremendous progress towards the elimination of trachoma as a public health problem. The 1996 baseline survey in Mali revealed that 75% of districts surveyed were endemic for trachoma, which equated to an estimated 85,000 TT people in need of surgery and an estimated 2.2 million people at risk of blindness due to trachoma. Mali began MDA in 2001, and by 2016, Mali conducted its final MDA as all

districts had reached the TF threshold for elimination of trachoma as a public health problem. From 1999 through 2020, the National Program conducted 89,533 TT surgeries, 30,983 of which were assisted by The Carter Center. The Program has noted that women received 60% of surgical services overall. A total of 179 TT surgeons were trained, and 105 surgeons received refresher training. By the end of 2020, an estimated 597 persons remain to be operated. The total number of persons may be fewer if anecdotal evidence observed during *ratissage*, or house-to-house case finding, (see below) remains true; fewer cases tend to be found than are estimated using survey data.

Ratissage

The National Program has implemented the ratissage strategy since 2014 to locate and operate on the remaining TT cases in the country. Prior to this, TT patients received surgery during TT camps and at community health centers. With time, it became difficult to locate the remaining cases using these methods. Therefore the Program moved to ratissage, moving house-to-house, screening everyone 15 years and above to identify TT cases and offer surgical services on site. All information related to screening, TT case confirmation, and surgeries is documented. The information is used by the Program to determine if "mop-up" activities are required in select areas; the Program aims to achieve 80% coverage of the target population. The ratissage approach in several areas of Mali, combined with data and experience from several other countries, revealed TIS were perhaps overestimating the number of TT patients remaining. In November 2018, due to the challenges programs were reporting related to the potential overestimation of TT, it was determined by the WHO Fourth Global Scientific Meeting (GSM4) that data from case finding, or ratissage, could be used in place of survey data to demonstrate that a district has addressed the TT burden in a district. Previously, only surveillance survey results could be used to demonstrate the achievement of both TF and TT thresholds for elimination. As such, the ratissage data from at least nine different districts will be used in Mali to demonstrate that the TT burden has been addressed. Though ratissage is necessary in select districts and has shown success in identifying the remaining cases, the ratissage strategy is time-consuming and costly. The strategy is also challenging to implement in certain areas due to insecurity and potential distrust of community members toward outsiders. During the COVID-19 pandemic, the National Program, with the support of The Carter Center, implemented the RAMA tool and established SOP to conduct ratissage and surveys in the remaining districts.

Transition Planning and Dossier Development

In collaboration with its partners, the National Program is currently collating relevant information to establish a program profile to better understand the services available and required to address the post-elimination needs. Some major components of this programmatic profile include the designation of referral clinics or hospitals for TT surgery, as the number of incident cases will be minimal; the number of trained surgeons for TT surgery and the plan for ongoing refresher training; the number of trained nurses for TT diagnosis and referral; the estimated number of consumables required; the plan for future financing for incident cases; and opportunities for collaboration with the WASH sector.

Work on Mali's dossier is well underway. In 2018, a task force was established to coordinate work on the dossier, and both the data and narrative portions of the dossier are in process. The National Committee for the Validation of the Elimination of Trachoma as a Public Health Problem in Mali was established and has held meetings to review the data and narrative draft documents.

As Mali is nearing its goal of elimination of trachoma as a public problem, some key challenges and lessons learned have been included for the benefit of programs that have yet to reach this stage. Long before programs near the elimination thresholds, programs should begin the transition plan as well as establish a plan for dossier development. Programs must also demonstrate good collaboration and coordination between partners and sectors and recognize the need to be flexible and adapt to challenges. Though programs must adapt to changing situations, it is also necessary to acknowledge that some issues, like insecurity, cannot be controlled; programs

should be aware that insecurity in just one district could prevent the entire country from finalizing the dossier for the validation of the elimination of trachoma as a public health problem.

Activities Remaining in 2021 to Achieve Elimination

Before Mali can submit the elimination dossier, hopefully in 2021, some key activities must be completed. The districts of Douentza and Koro (Mopti), Tominian (Segou), Koutiala (Sikasso), and Tombouctou (Tombouctou) must complete surveys and/or ratissage to demonstrate that the district has fulfilled the requirements for the elimination of trachoma as a public health problem. However, security has been a challenge for the National Program for many years, and some of these districts currently remain inaccessible. While some areas are currently restricted due to insecurity, the Program continues to establish the transition plan and complete the dossier in preparation for reaching those final districts.

Mali – TT Prevalence: Adults ≥ 15 years

1996

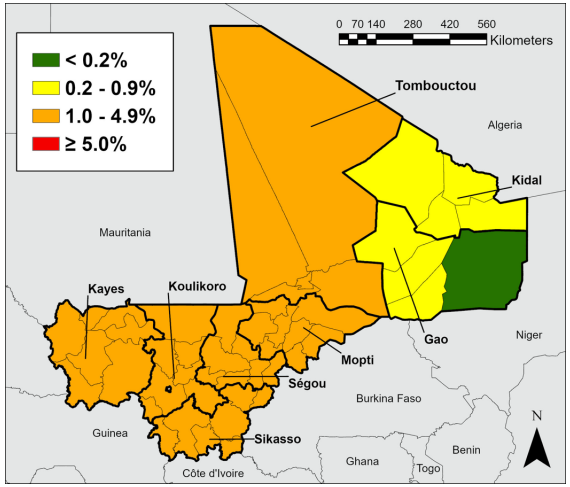


Figure 1

2009

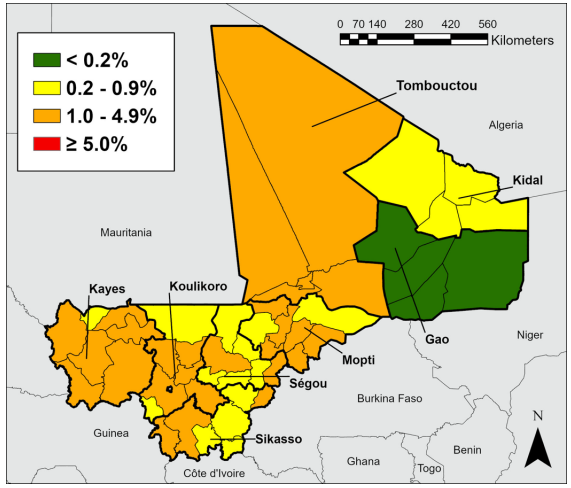


Figure 2

2020

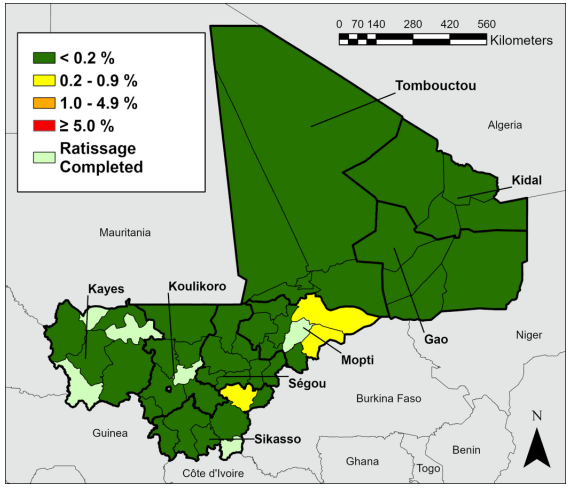


Figure 3

Mali – TF Prevalence: Children 1-9 years

1996

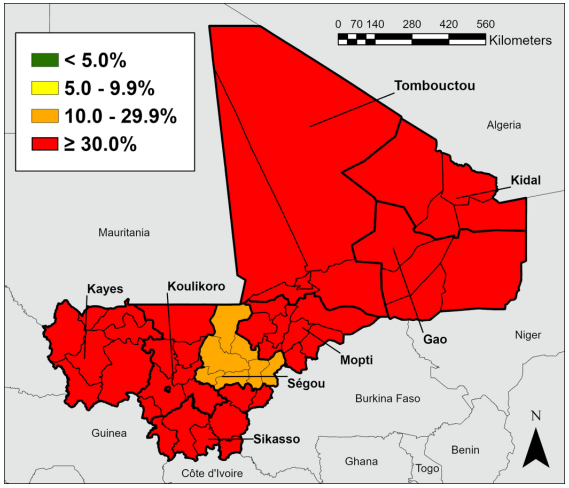


Figure 4

2009

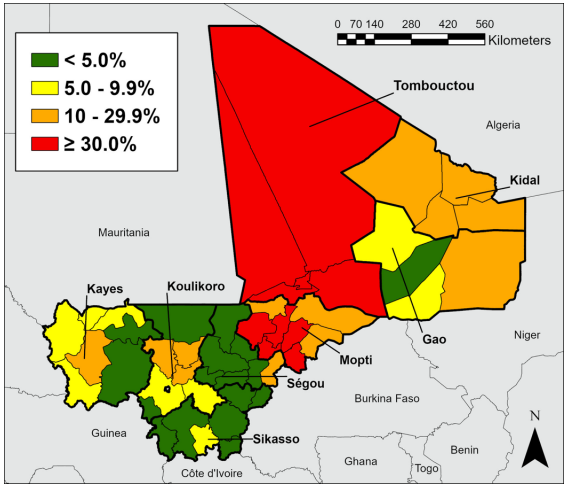


Figure 5

2020

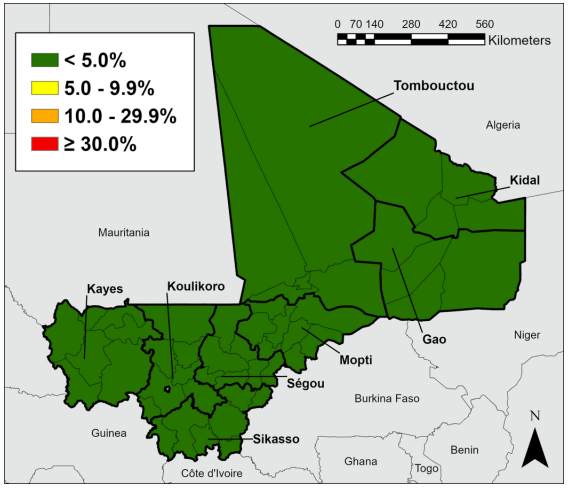


Figure 6

Mali – Ratissage Results

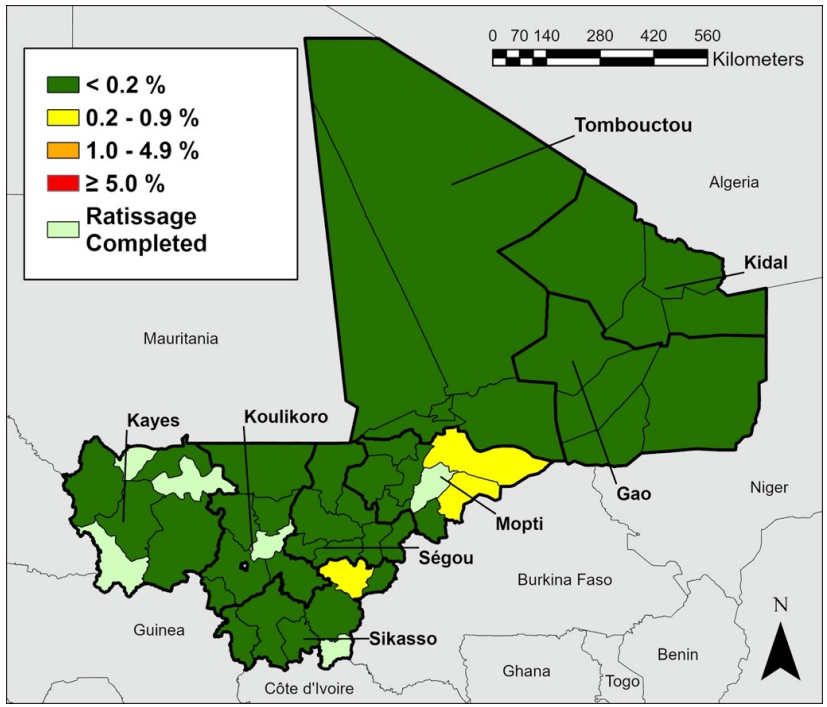


Figure 7 – As of 2020, nine districts will use ratissage data to demonstrate fulfillment of elimination criteria for TT. Five districts remain to complete survey or ratissage activities to demonstrate achievement of TT elimination criteria; according to impact survey, Tombouctou has a TT prevalence less than 0.2% but requires surveillance survey to confirm.

Mali – Activities Remaining in 2021 to Achieve Elimination

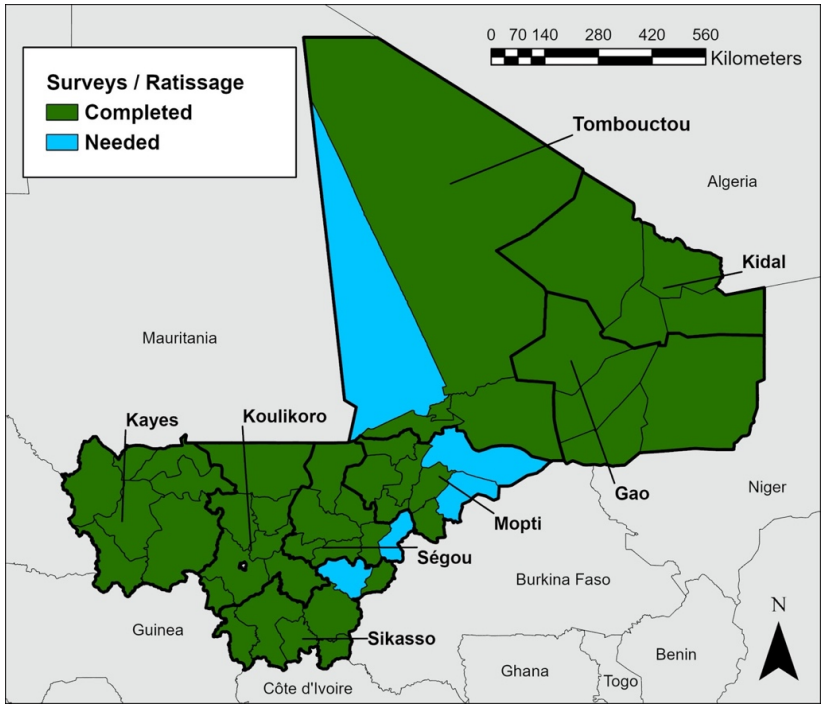


Figure 8 – Five districts remain to complete ratissage and/or surveys to demonstrate achievement of the TT elimination threshold; they include Douentza and Koro (Mopti), Tominian (Segou), Koutiala (Sikasso), and Tombouctou (Tombouctou).

SAFE in Niger

Presented by Dr. Kadri Boubacar, Coordinator, Programme National de Santé Oculaire (PNSO), Ministry of Health (MOH) – Niger

Background

The PNSO, formerly the Programme National de Lutte contre la Cecité (National Blindness Prevention Program – PNLC), was established in 1987; national surveys showed a prevalence of blindness of 2.2%, with 25% of the blindness due to trachoma. Regional baseline surveys conducted from 1997 to 1999 found that 44% of children ages 1 to 9 years had active trachoma, and 1.7% of women over 15 years of age had TT. In 1999, the PNSO formed the National Trachoma Task Force (NTTF) and began district-level prevalence surveys in 2001. In 2019, based on recent impact survey results and the required SAFE activities remaining, the Program revised the target for elimination from 2020 to 2025. Currently of the 62 health districts that are or were ever endemic, 20 districts (or select evaluation units within) remain above the 5% elimination threshold for TF.

Table 1. Program Achievements in 2020

Indicator	Goal	National		Carter Center-Assisted	
		Target	Achieved	Target	Achieved
# of persons operated	8,540	8,000	2,379	3,000	788
# of women operated			1,573		532
# of surgeons trained		45	15	16	0
Doses of Zithromax® distributed during MDA	1,597,902	1,597,902	1,456,968	N/A	N/A[1]
Doses of tetracycline distributed during MDA	100,000	100,000	100,000	100,000	100,000[2]
# of villages with health education		600	550	600	550
# of household latrines built		20,000	13,396	10,000	13,396

Surgery (S)

Since 2002, 148,517 TT surgeries have been conducted in Niger, with the greatest surgical output observed in 2014. The Carter Center has supported a total of 82,939 TT surgeries since 2009, mainly in Diffa, Maradi, and Zinder regions. According to recent data, 35 of the 62 endemic health districts in Niger have achieved the TT threshold (<0.2% TT in individuals 15 years or above); this leaves 27 health districts, or select evaluation units within a district, still above the 0.2% threshold, requiring further outreach. In 2020, 2,376 people received TT surgery, representing 30% of the annual target of 8,000. The Carter Center planned to support 3,000 TT surgeries in 2020 and reached 788 surgeries; nationally, a total of 15 new TT surgeons were trained. At the end of 2020, considering the annual surgical outputs, the estimated surgical backlog in Niger was 6,161. In order to achieve the trachoma elimination goals and reach the remaining TT cases nationwide, the National Program plans to implement a series of ratissage, surgical camps, and survey strategies.

Antibiotic Therapy (A)

The National Program reported that 42 out of the 72 districts in Niger have achieved the elimination target of less than 5% TF in children 1-9 years. Meanwhile, 20 districts have a TF prevalence of above 5%. In 2020, 1,456,968 doses of Zithromax® were distributed along with 100,000 doses of TEO; The Carter Center

[1] The Carter Center does not currently assist implementing MDA in Niger.

[2] The Carter Center does assist in purchasing tetracycline for MDA but does not participate in distribution activities.

supported the MDA efforts by providing the 100,000 TEO doses. In 2021, eight districts require MDA, ten districts will conduct TSS, and 14 districts will conduct TIS. Niger expects to achieve elimination of trachoma as a public health problem in 2025 when the final two surveillance surveys are conducted.

Facial Cleanliness (F) & Environmental Improvement (E)

In 2020, health education activities were conducted in 550 villages across Niger, with Carter Center assistance, to support the efforts to prevent trachoma transmission in communities. The Carter Center also supported the PNSO to construct 13,396 latrines and enhance latrine construction efforts by training 300 masons.

COVID-19 Impact and Mitigation Measures

In 2020, due to the COVID-19 global pandemic, all activities related to surgical outreach and surgeon training were suspended for eight months, and surveys were postponed until 2021; F&E activities slowed but did not stop completely. During this time, the National Program, alongside its partners, implemented a RAMA tool and developed SOP to mitigate the risk of COVID-19 transmission during programmatic activities. These tools will continue to be used to assess and reduce the risk for the foreseeable future as COVID-19 continues to impact Niger.

Operational Research

Two operational research protocols (PESS: Post-Elimination Surveillance Survey and ARRET: Azithromycin Reduction to Reach Elimination of Trachoma) have recently been approved to be conducted in Niger, and one study (AVENIR: *Azithromycine Pour la Vie Des Enfants au Niger - Implémentation et Recherche*) is currently being implemented.

Programmatic Successes and Challenges

The National Program is currently focused on organizing data to be used to complete the dossier, as it has been discussed that dossier development should begin early. The data organization activities include updating data, confirming data for newly created districts, and ensuring that each region shares data and information with its districts.

In addition to the challenges due to the COVID-19 pandemic, the program noted challenges with maintaining coverage of MDA above 80%. Additionally, the Program had hoped to make more progress in reducing the TT surgical backlog and increase surgical coverage overall in 2020. Still, due to the delays with COVID-19, that was not possible.

Program Plans for 2021

Surgery (S)

- Operate 5,000 TT cases, 3,000 with Carter Center assistance
- Train 36 TT surgeons, 20 with Carter Center assistance

Antibiotic Therapy (A)

- Distribute 1,577,042 doses of Zithromax® in eight districts
- Distribute 100,000 doses of TEO; The Carter Center will provide all TEO

Facial Cleanliness (F) & *Environmental Improvement (E)*

- Conduct health education in 550 villages, all with Carter Center assistance
- Construct 20,000 latrines, 10,000 with Carter Center assistance

Surveys

- Conduct 14 TIS and ten TSS

Operational Research

- Begin implementation of PESS and ARRET
- Continue implementation of AVENIR

Niger – 2020 TT Prevalence: Adults ≥ 15 years

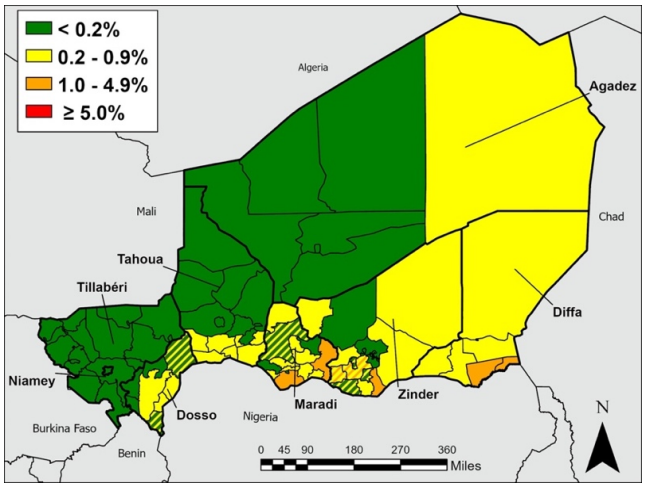


Figure 1

Niger – 2020 TF Prevalence: Children 1-9 years

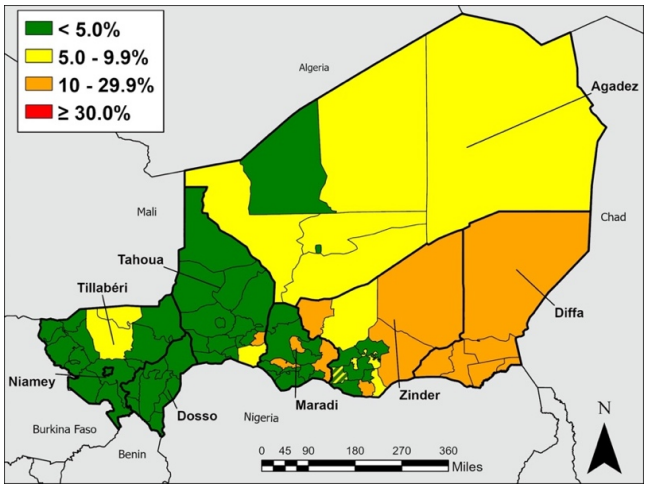


Figure 2

Niger – Activities 2021 MDA & Surveys

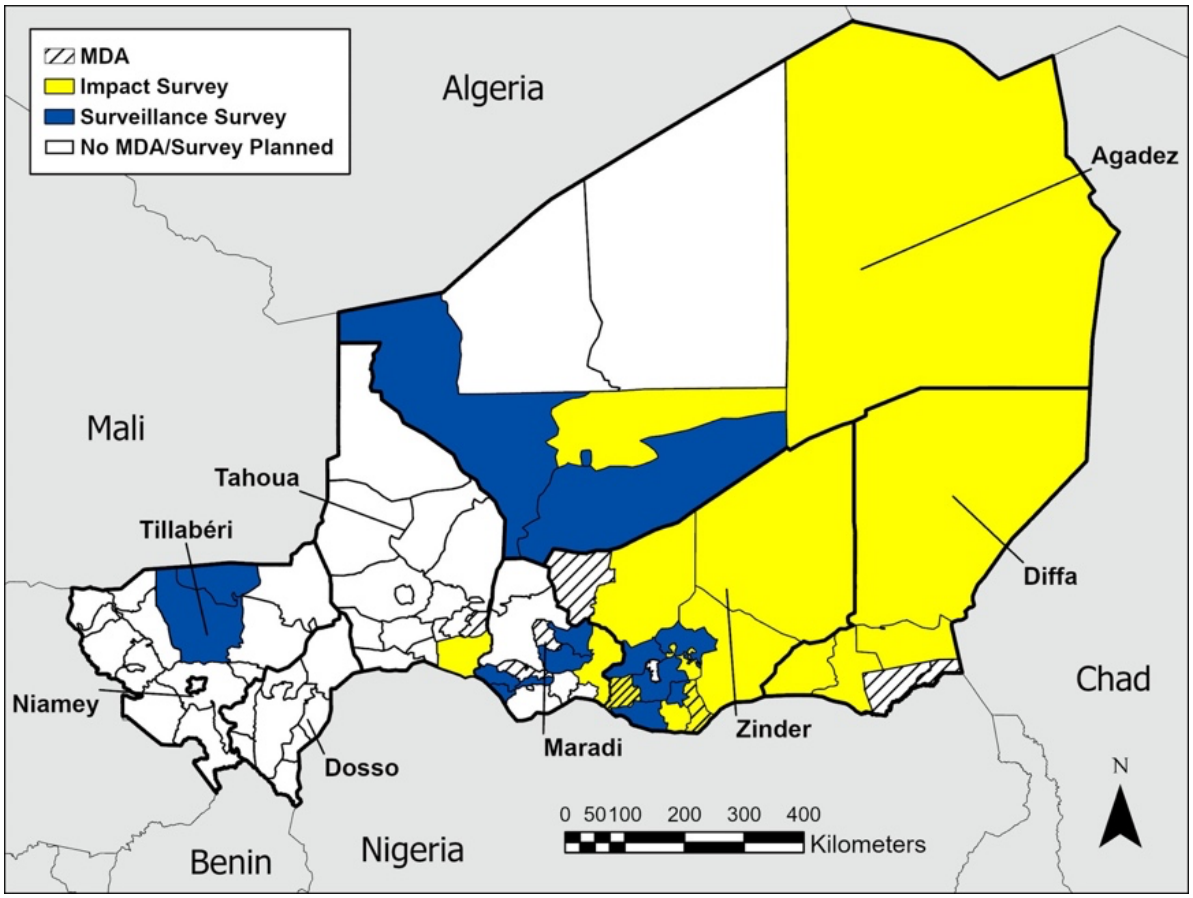


Figure 3 – In 2021, eight districts plan to conduct MDA, ten districts will conduct TSS, and 14 districts will conduct TIS.

SAFE in South Sudan

Presented by Mr. Makoy Samuel, Director for Guinea Worm Eradication Program (GWEP) and Preventive Chemotherapy – Neglected Tropical Diseases (PC-NTDs), Ministry of Health (MOH), South Sudan

Background

Prevalence surveys conducted between 2001 and 2008 showed TF prevalence as high as 80% among children ages 1 to 9 years old and TT prevalence as high as 15.1% among adults 15 years and older in some counties. Over half the country has not received baseline surveys; therefore, the true magnitude of trachoma within South Sudan is unknown. In areas known to be trachoma endemic, SAFE activities have not been conducted in all the counties due to a lack of resources or inaccessibility. The first national trachoma action plan (TAP) was completed in 2012, and a regional TAP was conducted covering five counties in Eastern Equatoria state in 2019. In 2020, the second version of the National NTD Master Plan covering 2021-2030 was adopted. The Master Plan includes trachoma targets and programmatic strategies.

Table 1. Program Achievements in 2020

Indicator	Goal	National		Carter Center-Assisted	
		Target	Achieved	Target	Achieved
# of persons operated	8,300	1,200	122 (10%)	530	72 (14%)
# of women operated			98 (80%)		60 (83%)
# of surgeons trained/retrained		5	0	-	-
Doses of Zithromax® distributed during MDA	1,743,793	506,651	329,537 (65%)	303,030	329,537 (108%)
Doses of tetracycline distributed during MDA	104,628	30,399	22,250 (73.1%)	16,043	22,250 (138.6%)
# of villages with health education		1,670	2,046 (122.5%)	1,000	2,046 (204.6%)
# of household latrines built		80	0	-	-

Surgery (S)

Over 50,000 people across 29 counties require TT surgery. Since 2001, the National Program has provided a total of 21,769 TT surgeries across South Sudan.

Based on survey results in 2015 and surgical activities conducted between 2015 and 2020, 2,533 people still require TT surgeries across five counties of Eastern Equatoria state. A total of 122 surgeries were conducted in 2020, 72 of which were conducted with the assistance of The Carter Center. Of the surgeries undertaken, 83% were provided to women. Performing TT surgeries was made extremely difficult due to the COVID-19 pandemic. Surgeries were carried out in February 2020 and then suspended due to the global pandemic. While adapted protocols were developed, surgery was considered a high-risk activity in terms of COVID-19 transmission, especially considering the close physical contact between a surgeon and patient. A total of 6,000 TT surgeries have been targeted in 2021, 900 of which are targeted to be conducted with the support of The Carter Center.

Antibiotic Therapy (A)

Of the annual MDA target for 2020, 351,787 people were reached with azithromycin or TEO across five counties in Eastern Equatoria state (Kapoeta East, Kapoeta North, Kapoeta South, Budi, and Lopa-Lafon). For the three Kapoeta counties mentioned, the fifth out of five rounds of MDA were conducted. It was the first of three rounds of MDA in Budi and the second of five rounds in Lopa-Lafon. The last MDA carried out in Lopa-Lafon dates back to 2016. In January 2021, Jie and Kessengor were both reached to complete the 2020 MDA cycle. Both Jie and Kessengor have been extremely hard to reach due to heavy rains, flooded swamps, and transport inaccessibility. Porters and donkeys carried drugs and food for over two days to reach their destination. In 2021, MDA will be conducted in Eastern Equatoria state, Jonglei state, and Unity state.

In 2021, 25 counties will be mapped across Unity, Jonglei, Upper Nile, and Central Equatoria states. In addition, Kapoeta East, Kapoeta North, and Kapoeta South counties in Eastern Equatoria state will have TIS. In 2021, based on known funding, 15 districts are targeted to conduct TIS, and 13 districts are targeted for baseline surveys.

Facial Cleanliness (F) & Environmental Improvement (E)

The National Program provided health education activities in 2,046 villages in 2020, reaching 122.5% of its target for the year. Health education efforts, one of the F&E components of the SAFE strategy, are continuous throughout surgery and MDA campaigns. Drug distributors, TT case finders, supervisors, county authorities, and local chiefs are all trained to use the trachoma flipchart. During any distribution, an emphasis is placed on providing health education in schools. Increased integration of WASH partners for trachoma – and NTDs in general – health education is critical, as is increased collaboration between WASH and NTD partners.

Due to the COVID-19 pandemic and programmatic challenges regarding WASH integration, latrine construction targets were not met in 2020. The National Program recognizes that a concerted effort needs to be made to reinforce the E aspect of the SAFE strategy, including the renewed inclusion of WASH partners in NTD-Trachoma activities. The F&E components are the root of a sustainable path towards the elimination of trachoma as a public health in South Sudan.

COVID-19 Impact, Challenges, and Mitigation Measures

The COVID-19 pandemic deeply impacted the National Program. As advised by the WHO, NTD programs in South Sudan suspended most of their program activities due to community transmission risk; this included surgery campaigns, MDA, and surveys. Trachoma MDA and surgery activities were paused from March to September 2020; thus, surgery and MDA targets were not fully met. Also, the Program had to face unexpected budget impacts due to the required purchase of PPE.

From March to September 2020, the National Program focused on developing protocols and new SOP to prepare the country for the resumption of activities, once deemed safe. Due to COVID-19, a RAMA was conducted to effectively understand and mitigate transmission and exposure risks during MDA and surgery outreach. MDA work plans were reorganized and redesigned to allow for a pilot MDA activity to be conducted following the adoption of the COVID-19 precautionary measures. House to house MDA was piloted as the official program strategy in September 2020 to ensure social distancing measures. However, this is not conducive to the traditional Kapoeta village, where several homes are within an enclosed space and people are treated per village rather than per house. All MDA team members used PPE during activities and followed hygiene protocols, such as regular hand and equipment sanitizing, outdoor training, and social distancing.

Upon the continuation of MDA activities, COVID-19 and trachoma health education was conducted simultaneously. In April 2020, a new tool kit was developed, in collaboration with the Guinea Worm Eradication Program (GWEP), the Trachoma Control Program, and the MOH, to improve communication

materials and adapt health messages to integrate hygiene and other messages relevant to COVID-19 prevention. This new tool is now being used throughout all MDA activities.

Other challenges include: the need to complete baseline mapping in over half of the country, lack of donor and implementing partner support for known endemic regions, few TT surgeons, and low levels of WASH infrastructure. This lack of program support will continue to impede the Program's attempts to achieve its elimination goals by 2030.

Program Plans for 2021

Surgery (S)

- Operate 6,000 TT patients, 900 with Carter Center assistance
- Train five TT surgeons

Antibiotic Therapy (A)

- Distribute 2,132,344 doses of Zithromax®, 400,000 doses with Carter Center assistance
- Distribute 127,940 doses of TEO, 24,000 doses with Carter Center assistance

Facial Cleanliness (F) & *Environmental Improvement (E)*

- Conduct health education in 10,661 villages, 2,000 with Carter Center assistance
- Construct 80 latrines

Surveys

- Conduct 15 TIS and 13 baseline surveys, three TIS with Carter Center assistance

Operational Research

- Proposed Study: F&E qualitative study among Toposa mothers
- MDA feasibility study with a focus on the cost of interventions in South Sudan

South Sudan – TT Prevalence: Adults ≥ 15 years

Baseline, 2001-2010

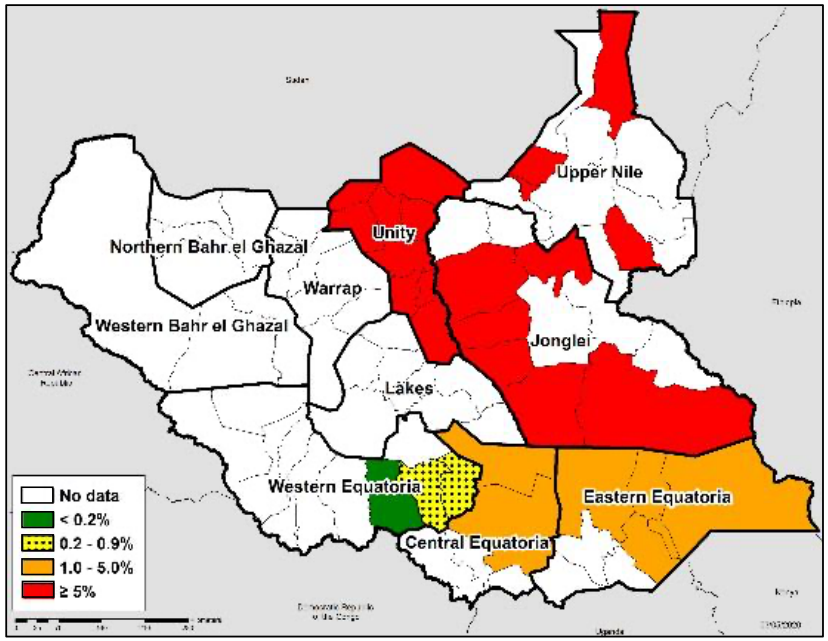


Figure 1

2020

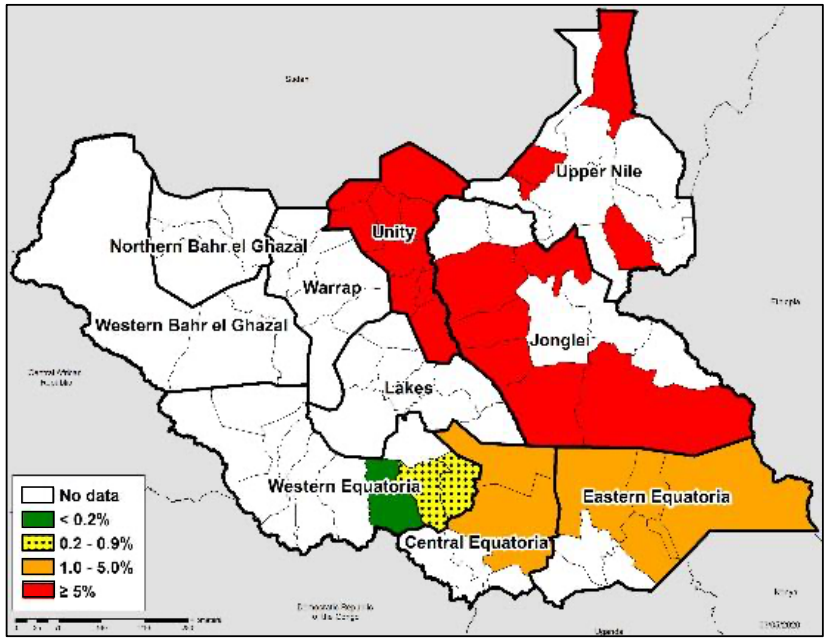


Figure 2

South Sudan – TF Prevalence: Children 1-9 years

Baseline, 2001-2010

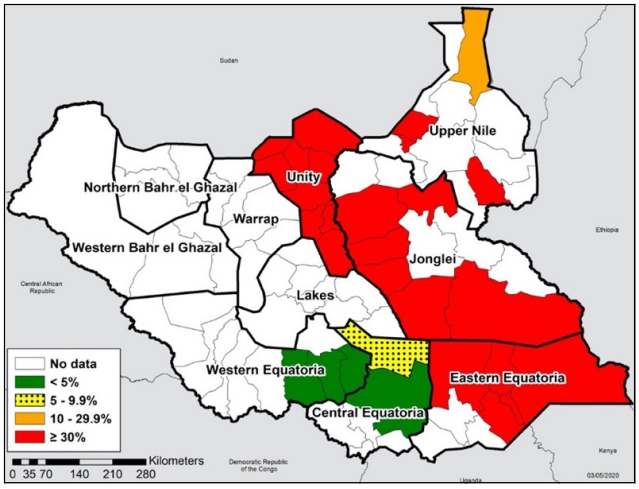


Figure 3

2020

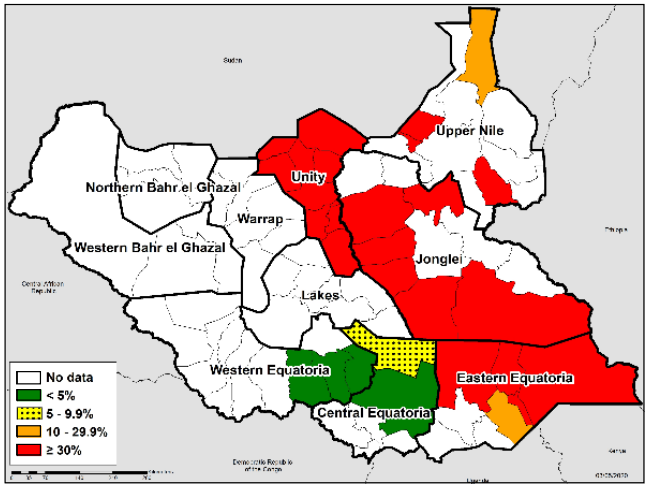


Figure 4

South Sudan – 2021 Planned MDA and Surveys

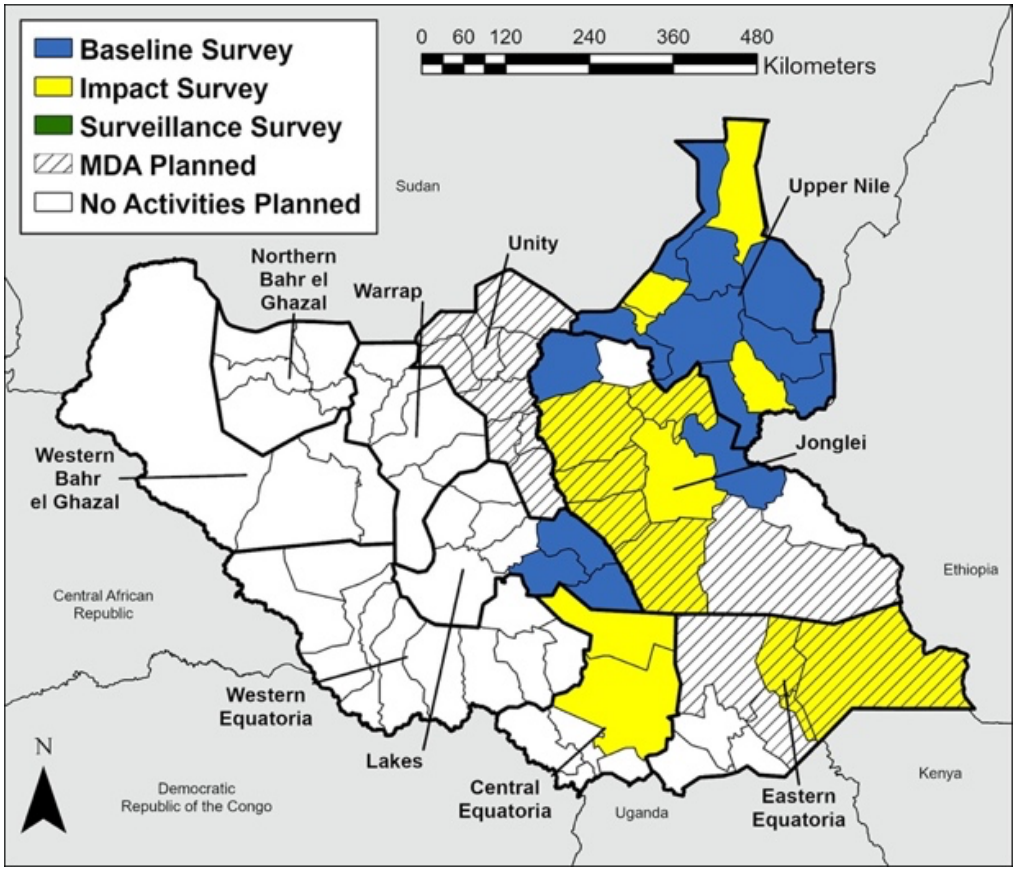


Figure 5

SAFE in Sudan

Presented by Dr. Balgesa Elshafie, National Coordinator, Trachoma Control Program, Federal Ministry of Health (FMOH), Sudan

Background

The elimination of blinding trachoma is one priority of the Federal Ministry of Health (FMOH), and government funds are allocated to support the Program. In 2012, the government allocated 1.5 million USD for five years to help support the Carter Center's partnership for trachoma control. There is a strong coordination mechanism between the government, (represented by the FMOH and Federal Ministry of Finance) and The Carter Center.

National baseline prevalence mapping was conducted between 2006 and 2015. In Darfur, only 11 localities remain that still require baseline mapping. The FMOH conducts S, A, and F elements of the SAFE strategy. The E intervention is implemented by various federal and state ministries and is supported by UNICEF and other organizations. Since baseline surveys conducted in 2017 in South Sudanese refugee camps showed that full SAFE interventions are warranted, The Carter Center has supported the FMOH to conduct SAFE activities within the camps. In 2019, based on activities remaining in Sudan, the elimination target was revised from 2020 to 2025.

Table 1. Program Achievements in 2020

Indicator	Goal	National		Carter Center-Assisted	
		Target	Achieved	Target	Achieved
# of persons operated	36,145	7,500	472 (6.3%)	2,100	229 (10.9%)
# of women operated			311 (65,8%)		167 (72.9%)
# of surgeons trained/retrained		30	35 (116.6%)	-	-
Doses of Zithromax® distributed during MDA	1,211,214	705,255	702,514 (99.6%)	505,959	394,643 (77.9%)
Doses of tetracycline distributed during MDA	24,224	14,105	16,194 (114.8%)	10,119	5,544 (54.7%)
# of villages with health education		625	276 (44.2%)	252	176 (69.8 %)

Surgery (S)

The estimated surgical backlog in Sudan is now 36,055, over half of which is in the Darfur region, where no TT surgical services have been provided. Additionally, over 25% of this backlog is based on TT data collected during baseline surveys conducted 10-15 years ago in areas that TF results showed were not trachoma endemic. In 2020 the National Program provided 472 TT surgeries, reaching 6.3% of its annual target. The Carter Center assisted 229 of the total surgeries achieved, 10.9% of its annual target. The total number of women operated by the National Program was 311. The Carter Center supported 167 surgeries for women. To increase uptake of TT surgery, 35 TT surgeons were trained in 2020.

In 2020, 24,625 houses were reached through TT case finding activities in endemic villages. A total of 102 suspected TT patients were identified by case finders, 82 of which were confirmed as TT by the TT surgeons. From these, 36 cases received surgeries, and nine were referred to the hospital for treatment.

TT case finding activities were also conducted in South Sudanese refugee camps. A total of 111 TT patients were confirmed to suffer from TT. From these cases, 95 cases were provided TT surgeries.

Antibiotic Therapy (A)

Through MDA in 2020, a total of 702,514 doses of azithromycin and 16,194 doses of TEO were distributed by the National Program. The Carter Center assisted the National Program in distributing 394,643 azithromycin doses and 5,544 TEO doses. MDA activities were also conducted in South Sudanese refugee camps. Due to the COVID-19 pandemic, MDA targets were not able to be met by the National Program.

In 2020, although 15 localities have achieved the TF elimination threshold, there are still 11 localities considered endemic, which is the equivalent to a population of 2,697,320 people. In 2021, a total of 11 localities are targeted for baseline surveys, eight localities are targeted for impact surveys, and 11 localities are targeted for surveillance surveys.

Facial Cleanliness (F) & Environmental Improvement (E)

The National Program carried out F&E activities in 2020 during MDA and TT surgical camps. Due to COVID-19, precautionary measures were followed when conducting health education in 2020. Thousands of posters, pamphlets, and stickers were distributed. The Program also supported the broadcasting of radio messages and live television health programs using local language for announcements of activities conducted by mobile teams.

COVID-19 Impact, Challenges, and Mitigation Measures

Due to COVID-19, the implementation of several activities during 2020 were considerably delayed, including: two rounds of MDA, one impact survey, two surveillance surveys, and 11 baseline surveys. TT diagnoses, case finding interventions, and TT surgery trainings were also significantly delayed. Additionally, the COVID-19 pandemic caused delayed health education activities in school-level programs.

In order to mitigate the impact of COVID-19 in programmatic activities, the National Program worked on developing new SOP for fieldwork in the context of the disease. A RAMA tool was applied, and precautionary measures were adopted; wearing face shields, masks, using soaps and hand sanitizers, and social distancing were all taken into consideration when restarting programmatic activities.

Operational Research

In 2020, the National Program implemented a serological study monitoring *Chlamydia trachomatis* (*Ct*) antigens. This study is a sub-study within a trachoma baseline survey conducted in Kotom, El Seraif, and Seraf Omrah localities in North Darfur state. The study is in partnership with the CDC and The Carter Center. Survey teams measured trachoma clinical signs as part of baseline surveys and collected blood samples. All individuals over the age of one were targeted for clinical examination and blood sample collection. In 2020, dried blood spots (DBS) samples were sent to the CDC for further analysis.

Programmatic Challenges

In general, the implementation of activities in Sudan was negatively impacted by the COVID-19 pandemic as well as economic and political factors. Additionally, the shortage of TEO in local markets affected MDA activities. Lastly, the National Program continues to need donor support and funding to conduct TT surgeries in the Darfur regions as well as water provision and latrine construction in all trachoma endemic areas.

Program Plans for 2021

Surgery (S)

- Operate 5,400 TT patients, 2,100 with Carter Center assistance
- Train 30 TT surgeons

Antibiotic Therapy (A)

- Distribute 347,060 doses of azithromycin, 201,376 doses with Carter Center assistance
- Distribute 6,941 doses of TEO, 4,110 doses with Carter Center assistance

Facial Cleanliness (F) & *Environmental Improvement (E)*

- Conduct health education in 349 villages, 159 with Carter Center assistance

Surveys

- Conduct eight TIS, 11 TSS, and 11 baseline surveys

Sudan – 2020 TT Prevalence: Adults ≥ 15 years

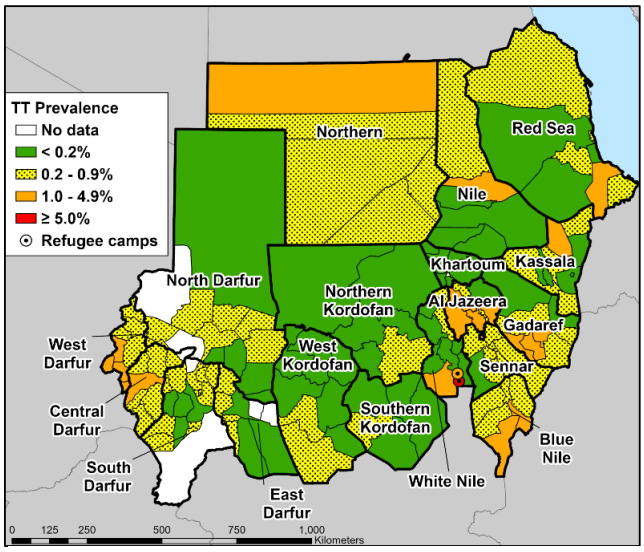


Figure 1

Sudan – 2020 TF Prevalence: Children Ages 1-9

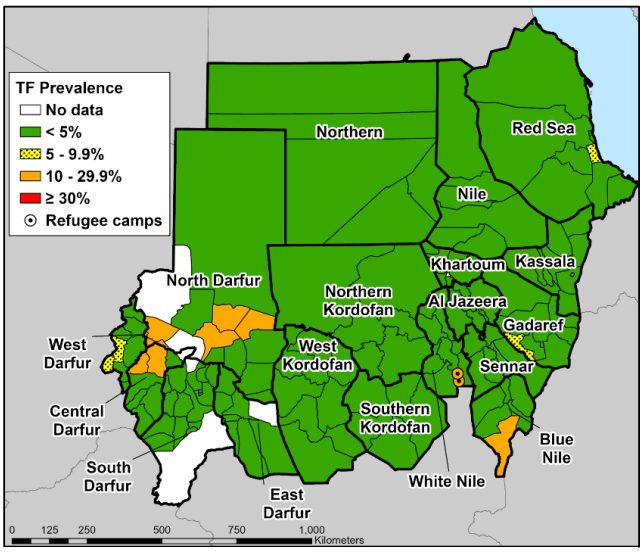


Figure 2

Sudan – 2021 Planned MDA and Surveys

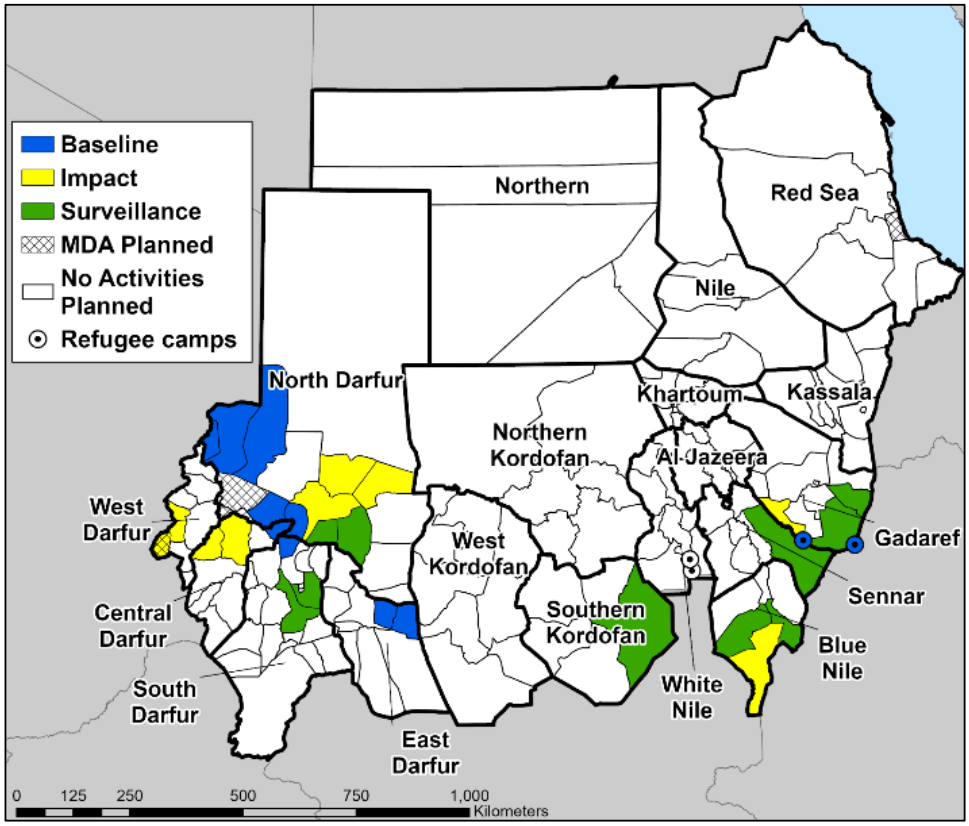


Figure 3

Table 1. Summary of National Data from Trachoma Control Programs, Carter Center-Assisted Countries

National Data as Reported for 2020

	Ethiopia	Mali	Niger	South Sudan	Sudan	Total
Surgery						
Surgeries	N/R	N/R	2,379	122	472	**2,973**
2020 Target	N/R	N/R	8,000	1,200	7,500	**16,700**
Percent Coverage	N/R	N/R	29.7%	10.2%	6.3%	**17.8%**
Antibiotics						
Azithromycin						
Doses	N/R	N/A	1,456,968	329,537	702,514	**2,094,376**
2020 Target	N/R	N/A	1,597,902	506,651	705,255	**2,809,808**
Percent Coverage	N/R	N/A	91.2%	65.0%	99.6%	**74.5%**
Tetracycline Eye Ointment						
Doses	N/R	N/A	100,000	22,250	16,194	**132,900**
2020 Target	N/R	N/A	100,000	30,399	14,105	**144,504**
Percent Coverage	N/R	N/A	100.0%	73.2%	114.8%	**92.0%**
Facial Cleanliness and Health Education						
Villages with Health Education	N/R	N/R	550	2,046	276	**2,872**
2020 Target	N/R	N/R	600	1,670	625	**2,895**
Percent Coverage	N/R	N/R	91.7%	122.5%	44.2%	**99.2%**
Environmental Improvements						
Latrines	N/R	N/R	13,396	N/A	N/A	**13,396**
2020 Target	N/R	N/R	20,000	N/A	N/A	**20,000**
Percent Coverage	N/R	N/R	67.0%	N/A	N/A	**67.0%**

N/A=Not Applicable

N/R=Not Reported

Totals only include countries and districts where data are available.

Table 2. National Trachoma Control Program Annual Targets 2021, Carter Center-Assisted Countries

Targets[†] as Reported, March 2021

	Ethiopia	Mali	Niger	South Sudan	Sudan	Total**
Surgery						
Persons to operate for TT	N/R	N/A	5,000	6,000	5,400	**16,400**
Antibiotics						
Doses of azithromycin to distribute during MDA†	N/R	N/A	1,577,042	2,132,344	201,376	**3,910,762**
Doses of TEO to distribute during MDA	N/R	N/A	100,000	127,940	4,110	**232,050**
Facial cleanliness						
Villages to reach through health education	N/R	N/A	550	10,661	349	**11,560**
Environmental improvement						
Household latrines to construct	N/R	N/A	20,000	80	N/A	**20,080**

N/A=Not Applicable

N/R=Not Reported

[§]All targets are subject to change.

†Antibiotic targets do not reflect ITI-approved allocations of Zithromax®

Table 3. Carter Center-Assisted Implementation of SAFE, Carter Center-assisted output

Summary of Interventions per Country, January - December 2020

Indicators	Ethiopia-Amhara*	Mali	Niger	South Sudan	Sudan	Total
Surgery						
Persons operated for TT	7,132	N/R	788	72	229	**8,221**
2020 Target	33,872	N/R	3,000	530	2,100	**39,502**
Percentage	21.1%	N/R	26.3%	13.6%	10.9%	**20.8%**
Antibiotics						
Doses of azithromycin distributed	0	N/A	N/A	329,537	394,643	**724,180**
2020 Target	15,310,025	N/A	N/A	303,030	505,959	**15,786,982**
Percentage	0%	N/A	N/A	108.7%	78.0%	**4.6%**
Facial cleanliness and health education						
Villages with ongoing health education	3,447	N/R	550	2,046	176	**6,219**
2020 Target	3,447	N/R	600	1,000	252	**5,299**
Percent Coverage	100%	N/R	91.7%	204.6%	69.8%	**117.4%**
Environmental improvement						
Household latrines constructed	N/R	N/R	13,396	N/A	N/A	**13,396**
2020 Target	N/R	N/R	10,000	N/A	N/A	**10,000**
Percentage	N/R	N/R	134.0%	N/A	N/A	**134.0%**

*Amhara reports latrine ownership, not latrines constructed; data not included in Total

N/A=Not Applicable

N/R=Not Reported

Table 4. Carter Center-Assisted Implementation of SAFE

Cumulative Interventions per Country, 1999-2020

Indicators	Ethiopia-Amhara	Mali	Niger	South Sudan	Sudan	Total
Persons operated for TT	715,259	30,914	84,856	10,787	12,196	**854,067**
Doses of azithromycin distributed (MDA)	182,748,584	698,083	3,780,392	3,991,679	8,138,879	**199,357,617**
Villages with ongoing health education	3,871	3,886	1,708	3,574	664	**13,703**
Household latrines constructed	3,336,513	116,722	165,070	646	N/A	**3,618,951**

N/A=Not Applicable

Figure 1. Persons Operated for TT, Carter Center-Assisted Countries

National Program data as presented for January - December 2020

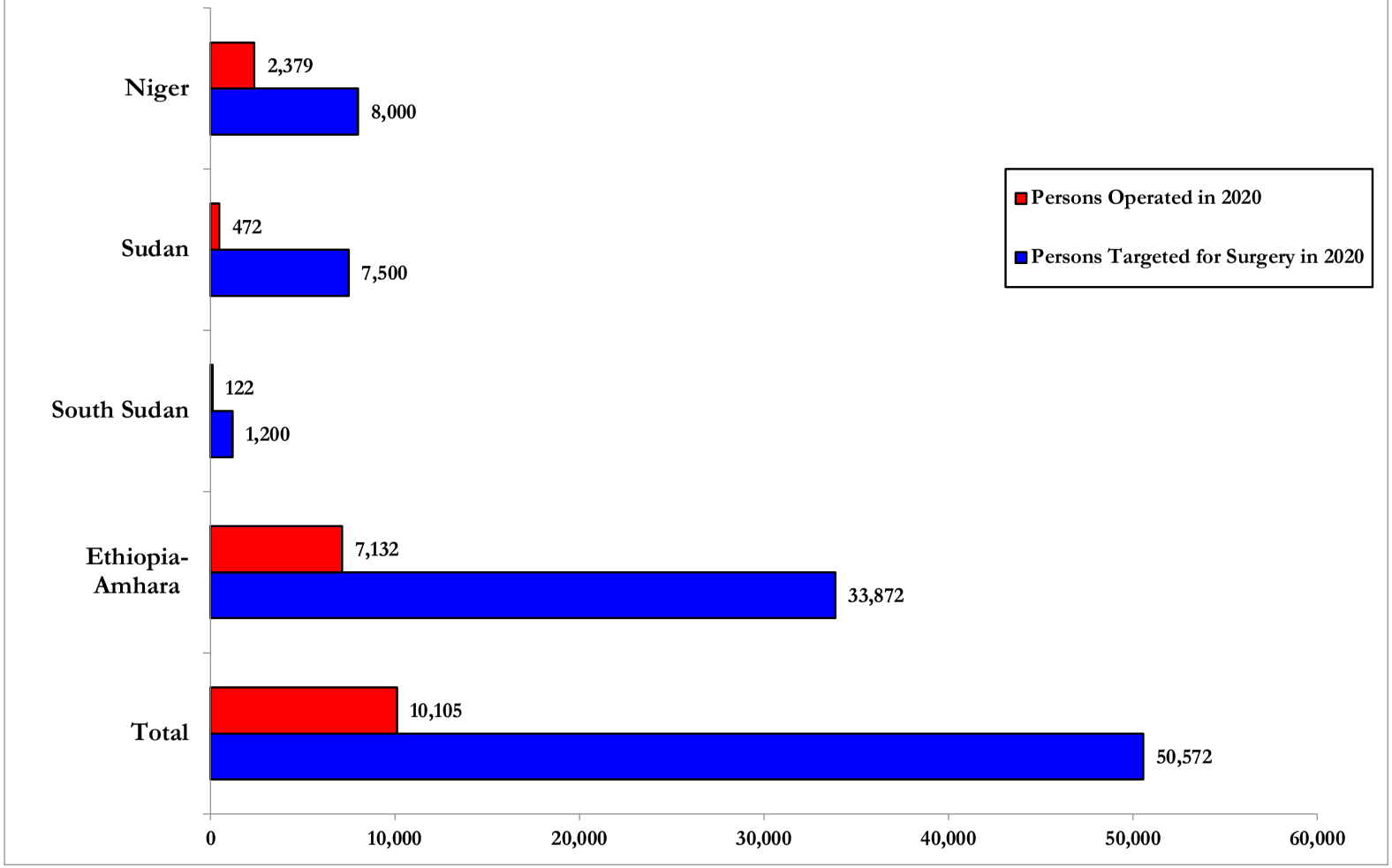


Figure 2. Azithromycin Distribution, Carter Center-Assisted Countries

National Program data as presented for January - December 2020

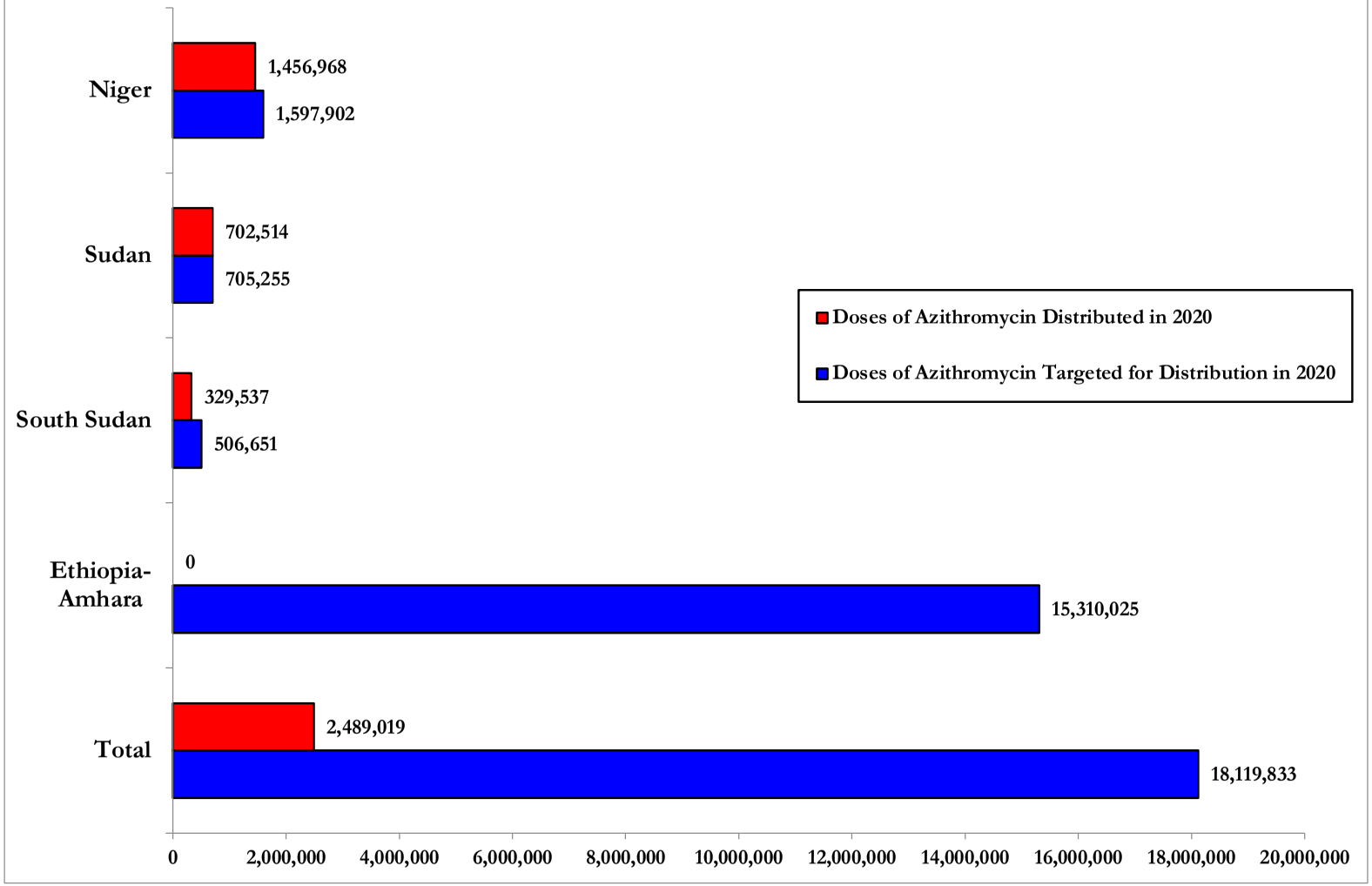
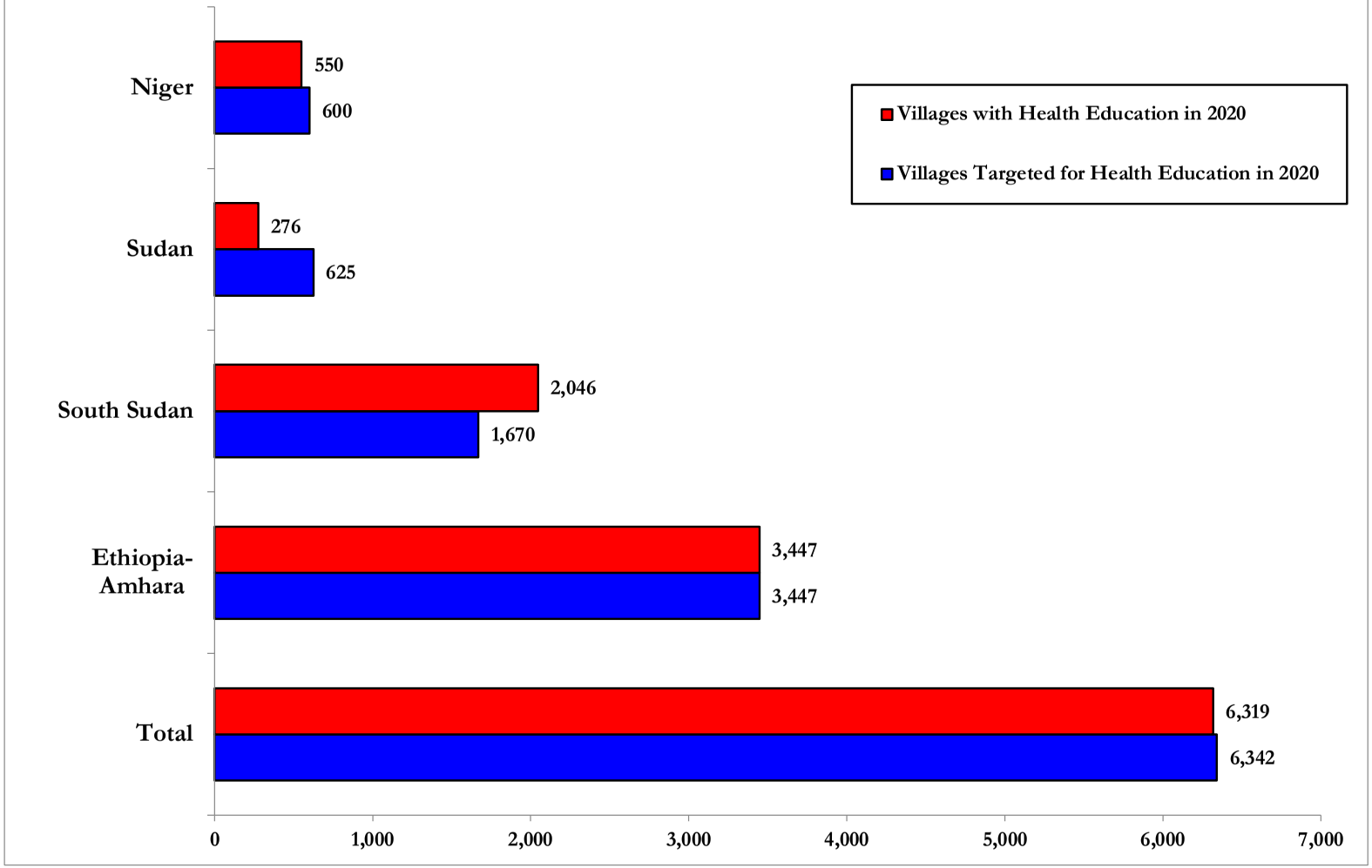


Figure 3. Health Education, Carter Center-Assisted Countries

National Program data as presented for January - December 2020



Persistent and Recrudescent TF: Patterns and Programmatic Implications

Presented by Dr. Jeremiah Ngondi, Senior NTD Advisor, Act to End NTDs - East, RTI International

Background

Global elimination of trachoma as a public health problem was targeted for 2020; however, only ten countries had been validated by the beginning of 2020. Despite not meeting the ambitious 2020 elimination goals, many countries have made steady progress towards the attainment of elimination. As programs gear towards the new 2030 NTD roadmap targets, innovative approaches are needed to enhance the timely attainment of elimination and to sustain the elimination gains post-validation. The WHO advocates for implementation of MDA with azithromycin, where prevalence of TF in children aged 1-9 years is above 5%. The recommended annual MDA is implemented in varying cycles depending on TF prevalence as follows: one annual round if TF=5-9.9%; three annual rounds if TF=10-29.9%; five annual rounds if TF=30-49.9%; and seven annual rounds if TF≥50%.

A number of end-game challenges that put country programs at risk of not attaining timely elimination of trachoma have been identified, including districts not attaining TF<5% following multiple cycles of MDA and TIS and districts not sustaining TF<5% during TSS. In most endemic countries, the majority of districts attain and sustain TF<5% after one or two MDA cycles; however, some districts struggle to escape a repeating "MDA-TIS-MDA-TIS-MDA" cycle, and some districts experience a rebound of TF (≥5%) at TSS and thus, per current guidance, have to restart another MDA cycle. Because of these "vicious cycles," there may be a considerable time lag from when the first district in each country attains elimination of TF<5% to the time when the last district in the same country attains the TF elimination target. As a result, country programs may be caught up in a decade-long implementation of SAFE in just a few districts where TF remains above 5%; and, if these problematic "cycles" remain unbroken, countries risk missing the 2030 goals as they did the 2020 goals.

Operational definitions

Based on recent discussions within the trachoma elimination community, the following operational definitions are proposed for persistent TF and recrudescent TF.

Persistent TF can be defined as any district that has had two or more TIS, and TF prevalence has remained above 5% and therefore will require further cycles of MDA. Based on the trends from the global atlas of trachoma, persistent TF can further be sub-classified as "high persistent TF" where prevalence remains above 10% and "low persistent TF" where prevalence tracks within the 5-9.9% range.

On the other hand, recrudescent TF can be defined as any district where TF prevalence rebounds to 5% or more at TSS. Based on the emerging trends from the global atlas of trachoma, recrudescent TF can be sub-classified into "high recrudescent TF" where prevalence rebounds to >10% and "low recrudescent TF" when the rebound prevalence ranges between 5-9.9%.

Programmatic implications

Persistent TF has programmatic implications in that multiple cycles of MDA will be needed in districts with persistent TF. For low persistent TF, TIS will be needed between each annual round of MDA – anecdotally, there are districts in certain countries that have had up to five annual MDA-TIS cycles before attaining the elimination threshold of TF<5%. There is also evidence suggesting that districts with persistent TF are likely to experience recrudescent TF during TSS, thus further propagating the vicious cycle. In some countries, only a few districts have persistent TF, which implies that the trachoma elimination program must be continued in those few districts.

Recrudescent TF on the other hand implies that districts have to restart MDA as per current guidelines. Restarting MDA in districts where TF elimination thresholds had been achieved can be challenging because enhanced social mobilization is needed to explain to recipient communities why further MDA is needed. Districts with high recrudescent TF mean that at least three rounds of MDA will be needed, thus extending the elimination timeline by at least five years. Low recrudescent TF means that elimination timelines will be extended by at least three years. Finally, emerging data suggest that there is a small sub-set of districts that have had two or more episodes of low recrudescent TF, which means that the elimination timelines could be extended by at least six years in such settings.

Conclusion and recommendations

Persistent TF and recrudescent TF not only prolong timelines to the attainment of elimination but also causes national programs to continue the implementation of MDA for a considerable period in just a handful of districts. Evidence suggests that districts with persistent TF are likely to experience recrudescence TF at TSS. This suggests that in districts with persistent TF, sufficient antibiotic pressure is needed to ensure timely attainment of TF elimination threshold and sustaining of TF below elimination threshold at TSS. This can be attained by longer MDA cycles before TIS by extending the number of annual MDA rounds or by undertaking two or more annual rounds of MDA. For districts with recrudescent TF, extending the antibiotic pressure beyond the current recommended rounds will provide the best chance to get the elimination targets back on track and attain timely elimination. Two or more annual rounds may be an appropriate approach to ensure timely attainment of elimination thresholds.

Persistent Trachoma: What have we learned? Lessons from Amhara, Ethiopia

Presented by Dr. Scott Nash, Epidemiologist, Trachoma Control Program, The Carter Center

The global trachoma control program has observed remarkable progress in reducing trachoma across the world since the establishment of the SAFE strategy. Since going to scale with SAFE in the Amhara region of Ethiopia, nearly 30% of the region (49/166 districts) has reached the TF threshold for elimination of trachoma as a public health problem. Despite this progress, there remains a considerable number of districts experiencing persistently hyperendemic levels of trachoma. The aim of this presentation was to describe the epidemiology of persistent trachoma within Amhara using data from serial population-based surveys, randomized control trials, and mathematical modeling.

Since 2011, the Trachoma Control Program in Amhara, Ethiopia, has been collecting alternative trachoma indicators alongside clinical signs within annual programmatic population-based surveys. Data on *Ct* infection and serological responses can better help characterize persistent trachoma. Recent data from trachoma surveys have demonstrated that nearly 30 districts remain above the 30% TF cut point among children ages 1 to 9 years, indicating hyperendemic trachoma despite approximately ten years of SAFE interventions. Further, in the Waghemra zone, in the northeast of the region, the zonal prevalence of ocular *Ct* infection remained considerable at 12% among children ages 1 to 5 years as of 2020. Although the zone observed a reduction from 2015 (18%), this high level of infection accompanied a district TF prevalence range well above the elimination threshold (17% to 54%). In the neighboring South Gondar zone, DBS were collected to test for antibody levels to trachoma antigens. In Andabet district, South Gondar, the seroprevalence of trachoma antibodies reached as high as 58% by age seven years with the population-based sample, suggesting ongoing transmission. Further south in the region, in Merebete district of the North Shoa zone, a TF prevalence of 36% was observed in a 2019 survey. Along with the hyperendemic TF, the district had a *Ct* prevalence of 34%, and a considerable number of the *Ct* positive children had high-load infections. The data from these surveys demonstrate areas of persistent TF within the Amhara region and objectively show considerable ongoing trachoma transmission despite ten years of A, F, and E interventions.

Several cluster randomized control trials have been conducted to test alternative "A" strategies for trachoma control within highly endemic districts in Amhara. In one long-running trial in Goncha district, East Gojjam zone, communities were randomized to either annual or biannual MDA. The duration of the trial was seven years, and MDA coverage was greater than 90% at each treatment round. By the end the trial, the average infection prevalence in those arms with continual treatment (both annual and biannual treatment) was approximately 6%, while the TF prevalence was still at hyperendemic levels (33%). In another trial conducted in hyperendemic Waghemra zone, communities receiving two annual rounds of MDA with over 90% coverage among children ages 1 to 5 years had increases in *Ct* infection by the end of the study, reaching an average prevalence of approximately 16% (up from 8%). These data demonstrate that even under nearly ideal conditions, it is hard to reduce *Ct* to very low levels and that TF is slow to respond to either annual or biannual MDA pressure.

Lastly, recent mathematical models have been published to project trends in trachoma prevalence over the longer term. These models demonstrated that within trachoma hyperendemic areas, current interventions will not drive districts below the elimination threshold (5% TF) by 2030. The models also showed that only with enhancements to the A component, such as extra rounds and targeting children, do hyperendemic areas reach the elimination threshold by 2030.

Amhara has seen great reductions in trachoma since the start of the program. However, increased focus will be needed in areas experiencing persistent trachoma. A strong commitment to the SAFE strategy coupled with data-driven enhancements and adaptations are necessary to drive the elimination of trachoma as a public health problem in Amhara and nationwide in Ethiopia.

Genomics Of Ocular *Chlamydia Trachomatis* After 5 Years Of SAFE Interventions for Trachoma in Amhara, Ethiopia

Presented by Dr. Harry Pickering, Department of Pathology and Laboratory Medicine, University of California, Los Angeles

To eliminate trachoma as a public health problem, the WHO recommends the SAFE strategy. As part of the SAFE strategy in Amhara National Regional State, Ethiopia, the Trachoma Control Program distributed over 124 million doses of antibiotics between 2007 and 2015. Both administrative and self-reported coverage have demonstrated treatment coverage in the region to be close to or above the WHO recommended minimum threshold of 80%. During this time, the program also provided village-based and school-based health education and assisted in the construction of latrines as part of the F and E components of SAFE. Despite these interventions, trachoma remained hyperendemic in many districts, and a considerable level of *Ct* infection was evident. Historically, *Ct* molecular epidemiology predominantly focused on ompA, the gene encoding the major outer membrane protein. Since 2010, there has been a rapid expansion of *Ct* whole-genomic sequencing (WGS) due to the ability to sequence directly from clinical samples. Despite more than 700 *Ct* genomes being publicly available, few studies have evaluated the role of genome-level variation in *Ct* transmission and clinical outcomes of *Ct* infection. Recent publications have begun to address these questions in *Ct* populations from trachoma-endemic settings and have shown higher diversity than expected, compared with the sequencing of cultured isolates. WGS additionally allows monitoring the emergence of antimicrobial resistance alleles in *Ct*, which is of critical importance as MDA with azithromycin is key for trachoma control and is also under consideration as an intervention for childhood mortality, neonatal sepsis, and bacterial skin diseases.

The Trachoma Control Program in Amhara has conducted multiple studies to better understand the epidemiology of trachoma in communities that have received approximately five years of annual MDA with azithromycin yet still have significant levels of *Ct* infection and trachomatous disease. The resolution of WGS allows for a greater understanding of *Ct* transmission patterns, presence of putative virulence determinants, and identification of antimicrobial resistance alleles. Therefore, this study, using samples collected from the Amhara region, sequenced the first ocular *Ct* genomes from Ethiopia, a country with 44% of the global burden of trachoma. We utilized residual material from Abbott m2000 *Ct* diagnostic tests to sequence 99 ocular *Ct* samples from Amhara and investigated the role of *Ct* genomic variation in the continued transmission of *Ct* following five years of SAFE.

We found sequences were typical of ocular *Ct*, at both the whole-genome level and in tropism-associated genes, yet phylogenetically distinct from most previously sequenced *Ct* genomes. There was no evidence of macrolide-resistance in this *Ct* population. Genome-wide analyses identified a polymorphic region around the ompA gene associated with village-level prevalence of trachoma. Additionally, greater ompA diversity at the district-level was associated with increased *Ct* infection prevalence.

Despite approximately five years of azithromycin MDA, we found no evidence for *Ct* genomic variation contributing to the continued transmission of *Ct* after multiple rounds of treatment, adding to previous evidence that azithromycin MDA does not drive acquisition of macrolide resistance alleles in *Ct*, supporting continued treatment in communities where trachoma prevalence remains consistently high. This study demonstrates feasibility of WGS of low-load, residual material and highlights the added value of collecting ocular swabs as part of routine trachoma surveys. Collection and long-term storage of these samples has helped alleviate concerns of azithromycin resistance to Amharan *Ct*, while offering important insights into the relationship between ompA variation and *Ct* infection levels. Future longitudinal investigation will be needed to understand what impact, if any, ompA diversity may have on treatment success in this setting.

South Sudan: A Face Washing Qualitative Study

Presented by Dr. Angelia M. Sanders, Associate Director, Trachoma Control Program, The Carter Center

Background

Trachoma among the Toposa

Within South Sudan, the Toposa are an ethnic minority group predominantly living in Eastern Equatoria state. This area borders Kenya, Ethiopia, and Uganda and is known to be endemic for trachoma.[3,4] Based on 2015 trachoma prevalence data, TF in children ages 1 to 9 years ranged from 30% to 48% across three counties where the Toposa live, and TT ranged from 2.6% to 3.7% in those ages 15 years and above.[5] Both the TF and TT indicators show that these communities are significantly above the WHO thresholds for trachoma elimination as a public health problem.

Social Marketing

Social marketing is a program planning tool that can be used to guide development and implementation of behavior change interventions.[6] Social marketing seeks to develop and integrate marketing concepts with other approaches to influence behaviors that benefit individuals and communities for the greater social good. Key elements of this approach include behavioral focus, audience segmentation, competition and exchange, formative research, and application of theories of change. As part of a multi-year project, a social marketing approach will be used to guide development and implementation of behavior change interventions targeting how Toposa mothers in South Sudan keep their young children's faces clean.

Planned Research

Overarching research question: Does a social marketing-based behavior change campaign lead to increased facial cleanliness and decreased trachoma prevalence among Toposa children?

Formative research question: What motivators, drivers, barriers, and contextual factors impact Toposa mothers' face washing behaviors of their young children?

Before the overarching question is answered, a social marketing-based behavior change campaign must be developed based on an understanding of the target audience's motivators, drivers, barriers, and contextual factors. Formative research must be conducted among Toposa mothers to gather the necessary information; since they are primarily responsible for the hygiene of their young children and, therefore, the target audience for the behavior change campaign. Three forms of qualitative data collection will be used as part of formative research: participant observation, journey mapping, and in-depth interviews (figure one, box one, and box two). Participant observation will take place in locations that are believed to have relevance to the research question and could provide insights into the target population's physical, cultural, and social environment. It also allows for observation of relationships, among and between people, and behaviors and activities people engage in, all of which can directly or indirectly impact decision making. Journey mapping is a way of identifying key

[3] Ngondi, J., Onsarigo, A., Adamu, L., Matende, I., Baba, S., Reacher, M., . . . Zingeser, J. (2005). The epidemiology of trachoma in Eastern Equatoria and Upper Nile States, southern Sudan. *Bulletin of the World Health Organization, 83*(12), 904-912. doi:/s0042-96862005001200012

[4] Sanders, A. M., Stewart, A. E. P., Makoy, S., Chebet, J. J., Magok, P., Kuol, A., . . . Nash, S. D. (2017). Burden of trachoma in five counties of Eastern Equatoria state, South Sudan: Results from population-based surveys. *PLoS Neglected Tropical Diseases* (6), e0005658. doi:https://doi.org/10.1371/journal.pntd.0005658

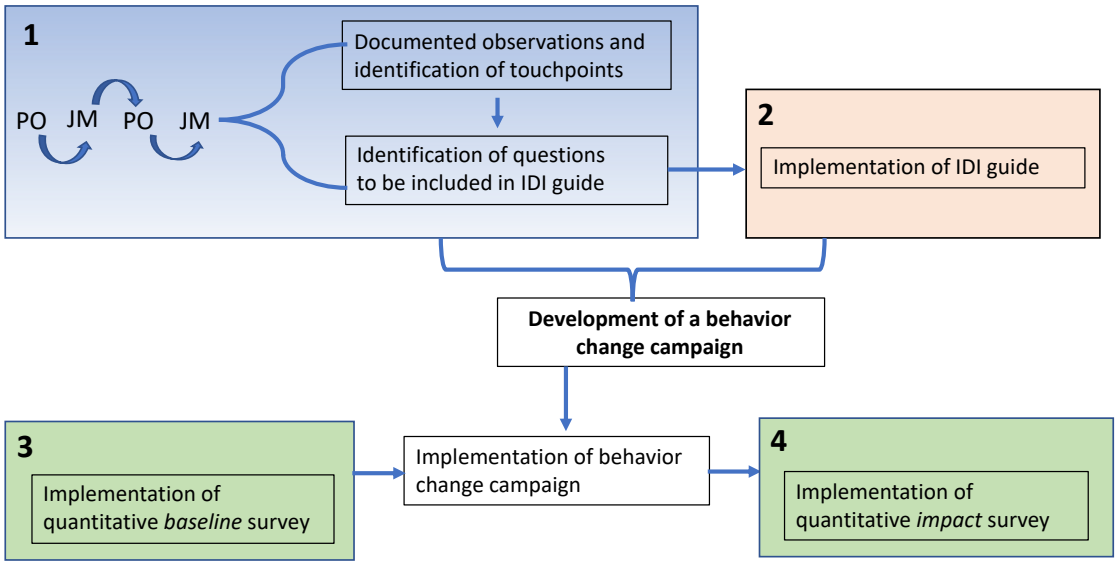
[5] Ibid.

[6] Lee, N., & Kotler, P. (2011). *Social marketing: influencing behaviors for good* (4th ed.): SAGE Publications.

moments, also known as 'touch points,' and understanding the emotional impact of a behavior or experience. The primary goal of journey mapping is to understand how these touch points assist or interfere with the decision-making process. For example, what are moments in the day where a mother is most likely to make a decision about face washing? In-depth interviews will be conducted with Toposa mothers and will focus on their experiences, perspectives, feelings, and attitudes.

Once this formative research is complete, a social marketing behavior change campaign will be developed and implemented among Toposa mothers. The program will be measured based on results from a baseline and impact survey (figure one, box three, and box four).

Figure one: Phases of data collection and program implementation



Abbreviations: PO = Participant observation; JM = Journey mapping; IDI = In-depth interview

Conclusion

This multi-year project will be innovative through its use of a social marketing framework to guide its various phases (data collection and analysis, product design, and implementation). Based on research to date, a social marketing approach has not been used among the Toposa of South Sudan, nor is there currently any peer-reviewed documentation of a qualitative study being conducted among Toposa women regarding their WASH practices. Lessons and insights learned in this study could be used for neighboring tribes from the same ethnic group living in endemic areas of Uganda, Kenya, and Ethiopia. It is hoped that development of skills related to conducting formative research within South Sudan can be used for other aspects of the SAFE strategy like TT surgery uptake, participation in MDA, and the building and use of latrines.

Health Campaign Effectiveness Coalition - Overview

Presented by Dr. Kristin Saarlas, Director, Health Campaign Effectiveness Coalition (HCEC), The Task Force for Global Health (TFGH)

The Health Campaign Effectiveness Coalition (HCEC) is a cross-campaign coalition that fosters learning and systems change. The Coalition brings together country leaders, donors, multilateral organizations, and NGOs from several large-scale health campaign domains, such as malaria, NTDs, immunization, polio, and Vitamin A, as well as specialists in health systems, ethics, and health economics.

The program was launched in December 2019, with funding from the Bill & Melinda Gates Foundation to the TFGH. A landscape analysis of the strengths, challenges, and opportunities within current health campaigns informed the design of the program. Campaigns that were considered included MDA for NTDs such as trachoma, onchocerciasis, lymphatic filariasis, deworming programs; polio and other immunization campaigns; malaria bed net provision; and vitamin A supplementation. These programs have all been very successful, but the analysis found that countries with multiple campaigns often had an overlap in timing and target populations with limited communication and collaboration between campaign planners and partners. The resultant operational inefficiencies have strained country health systems, burdened community health care workers, and challenged our ability to meet country and global health goals. However, stakeholders identified multiple opportunities to share campaign infrastructure, explore integrated approaches, and learn from each programs' best practices. The final steps towards ambitious disease eradication and elimination targets require bold strategies to reach the most difficult-to-reach populations, and policies that support country capacity and ownership to sustain health gains**.**

The HCEC's vision (https://campaigneffectiveness.org/our-vision-goals/) was developed through a collaborative process by our leadership and coalition design team (including colleagues from The Carter Center and TFGH's trachoma programs). The vision and goal are as follows:

> **Vision:** Country-led health systems use a strategic balance of targeted health campaigns in concert with regular health services to achieve and sustain health-related development goals for all people.
>
> **Goal:** Health systems objectives are met through highly effective and equitable use of campaigns that are planned and delivered in conjunction with ongoing health services and that reach all populations targeted for the intervention(s).

The HCEC's vision, goals, and theory of change model informed three key roles for the coalition:

First is to foster improved communication and collaboration across campaign domains, countries, implementers, multilateral organizations, and funders. The sharing of promising practices has been going on for some time within our respective health domains--but there's not one place to go to find resources and tools that can work across campaigns. The HCEC can be that place that brings it all together to discuss, document, and accelerate the learning.

Second is the need to build the evidence base. We see an important role for this Coalition in supporting implementation research that will identify, test, and scale-up effective health campaign practices, approaches, and tools.

Third is to use those findings to align global partners around any necessary programmatic and policy changes. The Coalition fosters continuous learning and systems change, especially through global policy alignment around campaign funding, incentives, and support. This includes the adoption of principles to guide efforts to enhance cross-campaign coordination and the strengthening of health systems.

The 2021 priority activities were extensions of these three key roles. Improved communication and collaboration were advanced through our first Coalition meeting in October 2020 and via subsequent "test and learn" webinars that convened colleagues to share ideas, emerging research findings, and their application to other country contexts. Moreover, our campaign integration working group is developing a decision guidance toolkit for people-centered integration of health campaigns to have countries use and adapt to their needs. Discussing, documenting, and accelerating learning, and building the evidence base was advanced through the funding of eight case studies on collaborative campaign planning. Additionally, ten countries were recently selected to receive implementation research awards on campaign integration and transitioning campaigns into primary health care. Although findings are still emerging, there remains a need to look at where and how countries can apply findings to develop new programmatic guidance.

The HCEC implementation research and learning agenda addresses key research and learning questions organized according to three broad themes that involve restarting health campaigns during the COVID-19 pandemic, full and partial integration between health campaigns, and the interplay between campaigns and primary healthcare systems. As reflected in the NTD Roadmap 2030 and other recent program guidance from WHO; Gavi, the Vaccine Alliance; and the Global Polio Eradication Program, there is a renewed emphasis on moving away from a silo approach to one that optimizes opportunities for collaboration between campaign programs and, where it makes sense, integrating different interventions to build a more aligned approach within health systems.

The opportunities for involvement and collaboration with the HCEC are many-fold between the Trachoma Control Program and other NTDs that The Carter Center has been involved in for decades. First, there is the opportunity to be engaged in implementation research on collaborative campaign planning and integration. Building the evidence base involves contributions of promising practices as well as those that did not work. Second, we encourage all to participate in sharing findings, practices, and lessons learned through our "test and learn" series, other coalition events, website, and newsletter. Finally, new campaign practices of the Trachoma Control Program can be shared back with Coalition members to broaden reach and improve global operational efficiency.

For further information please access our website at http://campaigneffectiveness.org or contact campaigneffectiveness@taskforce.org

Literature Review Of Photography As An Imaging Tool For Trachoma

Presented by Dr. Fahd Naufal, Post-Doctoral Fellow, Wilmer Eye Institute, Johns Hopkins University

The WHO has targeted trachoma for elimination, defined with three criteria: first, the prevalence of TF in children ages 1-9 years is sustained at <5% at district level; second, the prevalence of TT in persons age 15 and older is <0.2%; and third, evidence that the health system can appropriately identify and manage TT. These three criteria have been met when documented by two population-based surveys, spaced at least two years apart and in the absence of MDA. As the prevalence of trachoma declines worldwide, performing field surveys to validate elimination has become increasingly difficult, and field graders can lose familiarity with the clinical findings of the disease. The challenges posed by training and standardizing highly skilled field graders may be mitigated by using photography to augment or replace field grading.

In addition to minimizing the logistical issues of training skilled field graders, imaging may contribute to the reduction of certain biases. Field graders may have preconceived ideas on the prevalence of trachoma in a village or household, which can influence grading. Using images can mask graders to the trachoma status. Images may also serve as a permanent record of trachoma status at the time of exam, which can be used for validating field data and improve auditability. Furthermore, consensus on difficult cases using multiple graders is more feasible when using images.

However, the use of imaging as a tool to detect trachoma requires further study as one or two images may not be adequate to capture all the necessary information to accurately assess trachoma, particularly TT. Moreover, quality assurance and quality control would prove difficult in the absence of standardized photographic tools for trachoma. In conducting this literature review, our primary goals were to identify and summarize the literature on the use of photography for trachoma detection. In particular, we sought to identify studies that compare the concordance of field grades of trachoma with image grades, the concordance between field graders, and between image graders. We also reviewed studies comparing various camera systems for capturing images of TF, TI, as well as TT and eyelid contour abnormalities resulting from this disease. The concordance, or agreement, is reported as the kappa statistic, which is a measure of the strength of association between graders. The kappa statistic ranges from zero to one with one being perfect agreement. In research, agreement of 0.7 or greater between graders is generally considered adequate.

We performed literature searches on the PubMed, SCOPUS, and Cochrane databases to identify papers published between 1990 and 2020. The searches were conducted using a combination of the following keywords: "trachoma", "photograph", "image", "grade" and "prevalence". Screening of abstracts, full-text review and data abstraction were conducted by two reviewers. We included full-text, peer-reviewed articles that used photography to either estimate the prevalence of trachoma, or to serve as a quality assurance mechanism to compare with field grades; and described agreement between image graders, field graders, and/or image and field graders. Articles where photography was not used or the agreements as described above were not reported, articles using photographs solely to grade trachomatous scarring, or articles only reporting validation scores for training graders were excluded.

We included 21 articles following the literature search after reviewing the abstracts of 265 titles. Nineteen studies described the use of TF and trachomatous inflammation-intense (TI), one study described the grading of images of eyelid contour abnormalities, and one study discussed the grading of TT using 2-D and 3-D images. The type of camera system used was described in 14 studies. Single-lens reflex (SLR) cameras were used as photography tools in 12 articles, whereas smartphone cameras were used in three, either as the sole photography tool or in conjunction with SLR cameras. The reported number of ungradable images ranged between 0.5% and 78%, as reported in six studies.

Our summary of kappa statistics (medians and ranges) is presented in Table 1 categorized as agreement between Field vs Photo grades, Photo vs Photo grades, and Field vs Field grades for TF and TI. As a reference, Tropical Data specifies an inter-grader kappa score of 0.7 or higher to assess a field grader's ability to identify TF, which may also explain the higher median kappa in the field vs field category. There are no formal assessment requirements in terms of an agreement threshold for TI or TT. Agreement statistics for the presence of active trachoma (TF and/or TI) that were not disaggregated were reported for two articles and not included in Table 1.

Table 1. Median and range of reported kappa statistics for TF and TI

Active Trachoma – **Range of kappas and medians**	**Field vs Photo** **(N = 10)**	**Photo vs Photo** **(N = 8)**	**Field vs Field** **(N = 2)**
TF	TF 0.57- 0.92 Median: 0.71	TF 0.37-0.90 Median: 0.68	TF 0.73 – 1.0 Median 0.86
TI	TI 0.37-0.80 Median: 0.60	TI 0.47-0.83 Median: 0.71	TI 0.73 – 0.91 Median: 0.82

Though the kappa scores do not support the use of 3D images in the field for grading TT, training graders using 3D images who then graded in the field showed matching performance compared to experienced graders grading in the field. Therefore, using 3D images can be useful to train graders to detect TT.

Our overall findings suggests that there is potential in using photography to detect trachoma both as a research tool and a training tool. This platform has good validity and reliability, depending on the quality of photographs as well as the training level of graders. The agreement scores between field and photo grades were variable among the papers, as there is potential for errors to be made during both types of grading. Agreement between image graders were also variable but was greater when image quality and ungradable images were accounted for. Grading by consensus using multiple image graders to determine the final image grades greatly improved agreement between photographs and field grades. However, having more borderline cases can negatively affect agreement, like in instances following antibiotic treatment when trachoma follicles tend to be smaller and more difficult to grade. The type of gold standard used for comparison may also affect agreement; using field images as the gold standard when testing validity is most common but that assumes that all patients were diagnosed correctly.

Training and certification of image graders is necessary, and the photo sets used in training must include a full spectrum of disease, including borderline cases, to adequately represent the variations seen in the field. Future studies should aim to report the specifications of the imaging devices used as well as the number of ungradable images that were present to aid in standardizing photography tools. Increasing field tests and training of photographers in the field is needed to improve image quality. SLR images were slightly better than smartphone pictures, but using newer smartphones and lens attachments can close the gap. Improvements in algorithms and deep learning methods may provide a valid and convenient method of grading. Training photographers may be less expensive than training and sending graders into the field; using regional grading centers for images may be convenient and could reduce the need to send trained graders out into the field.

Photographic Grading For Trachoma Diagnosis Within Trachoma Impact Surveys: A Study In Amhara Region, Ethiopia

Presented by Ms. Cassidy Whitson, Health Communications Specialist, Centers for Disease Control and Prevention (CDC)

Photography is increasingly being used to capture the signs of trachoma for randomized trials, including those conducted in the Amhara region of Ethiopia. In Amhara, conjunctival photographs have not yet been used as a tool for monitoring and evaluation or quality control. As countries reach trachoma elimination as a public health problem targets, finding community cases for field grader training may become difficult. We hope that photographic grading will be able to be used as a tool for training and be integrated into existing control programs.

To help answer some of these questions, The Carter Center embedded a photography pilot study within the 2017 TIS in Eastern Amhara. The aims of the study were to (1) assess the feasibility of including photographers within survey teams, (2) assess the effectiveness of an in-country grading center, and (3) evaluate the comparability of field and photographic grading in the Amhara region of Ethiopia. The photographer accompanied four field graders to ten districts in Eastern Amhara. There was one cluster in each district and field grader visited between two to three clusters each. The same photographer was embedded within each field team. A total of 1,243 individuals of all ages were photographed directly following field grading. Both right and left eye photographs were taken. A minimum of two photos of each eye were taken, and if photos were deemed poor quality, more were taken.

As part of this study, The Carter Center partnered with the University of Gondar in Gondar, Ethiopia, to create a new Gondar Grading Center. This center was created to grade study photos and build capacity of local researchers in the Amhara region. The photo graders at Gondar Grading Center were ophthalmology students or residents with background knowledge of trachoma. They were trained during a one-day training at Gondar Grading Center which consisted of lectures and exercises and concluded with photo grading certification exam conducted by University of California San Francisco ophthalmologist. To be certified, the trainees needed kappa of 0.6 relative to the gold standard grade (consensus of a panel of three expert graders). All grader trainees passed the exam and went on to grade study photos.

To grade the study photos taken by the photographer, two grading stations were set up at the grading center in late 2019. The full photo set loaded onto each station. Two graders were assigned to station #1, and three graders were assigned to station #2. The graders were able to come, log in, and grade when they were available, which allowed for quick turnaround. Graders viewed two images of the same eye at the same time, were masked to the field grade, and made determinations for TF, TI and TS. If both graders agreed, that became the final grade for the photo. If they disagreed, the photo went to a third adjudication grader. This grader then made a determination, which went on to be the final grade.

When comparing the field grades to the final photo grade, the kappa for TF was 0.701 and percent agreement was 96.7%; for TI k=0.319, percent agreement was 94.7%; and for TS k=-0.086, percent agreement was 75.6%. Agreement between field and final photo grades for TF was comparable to other results from controlled trials assessing photographic grading for trachoma. However, the kappa for TS was less than zero, which suggests that the grading center and field grade agreement performed worse than would be expected from chance alone.

This study demonstrated that gradable photographs can be taken under standard survey conditions and that photographs can be graded quickly and efficiently at an in-country grading center. However, work is needed to improve agreement between field and photo grades. As endemic countries progress forward towards elimination targets and community cases of active trachoma decrease, validation of new cases with photo graders may prove useful as a means of quality control.

International Coalition For Trachoma Control (ICTC) Updates

Presented by Mr. Scott McPherson, Senior Program Manager, RTI International, and Immediate Past Chair, International Coalition for Trachoma Control (ICTC)

About ICTC:

The ICTC is a multi-stakeholder coalition of over 50 non-governmental, donor, private sector, and academic organizations working together to support the WHO Alliance for the Global Elimination of Trachoma by 2020 (GET2020 Alliance). Since our creation in 2004, ICTC has served as a forum for collaboration, shared learning, and joint programming to support global efforts to eliminate trachoma as a public health problem and advocated for and supported the implementation of the WHO-endorsed SAFE strategy.

Opportunities for the coming decade:

- The past year has been a year of unexpected challenges and disruptions brought about by the ongoing COVID-19 pandemic. ICTC wishes to acknowledge WHO's continued leadership to guide health ministries and all stakeholders in supporting a comprehensive approach to combatting both COVID-19 and supporting the resumption of NTD activities where possible.

- ICTC also wishes to thank all health ministries, implementing partners, donors, industry, research, and academia for their commitment to partnership and collaboration to work together during these challenging times.

What the new WHO Global NTD road map means to ICTC:

- While we may not have reached our original 2020 goal of global elimination of trachoma as a public health problem, the new road map assesses the challenges and barriers and sets out an updated course of action. ICTC remains committed to supporting the WHO Alliance for the Global Elimination of Trachoma.

- The trachoma community has long demonstrated what can be achieved when cross-sectoral partnerships are formed towards defined goals, evidenced by a 91% reduction in the number of people at risk of trachoma since 2002 and ten countries being validated for eliminating trachoma as a public health problem across WHO-endemic regions. Collaboration between health, WASH, education, and so many other sectors is crucial to sustaining progress and advancing our contribution to strengthen health systems and achieve new road map targets.

- ICTC is committed to delivering the new road map and supporting the paradigm shifts that underpin this new road map through increased accountability, community empowerment and country led decision making, and cross-sector collaborations to achieve our shared vision.

New ICTC Executive Group:

- This month, ICTC sees in new member elected leadership at the helm of ICTC for 2021 – 2023: Angelia Sanders, Associate Director, Trachoma Control Program, The Carter Center is the new ICTC Chair; PJ Hooper, Deputy Director, ITI is Vice Chair, and Scott McPherson, Senior Program Manager, RTI International now serves as Immediate Past Chair.

- This Executive Group will be leading ICTC through a new phase of strategic engagement across ICTC encompassing two new areas of work (i) an updated costings analysis of the delivery of the SAFE strategy, which will in turn inform (ii) a new ICTC strategic plan for 2021 – 2030 in alignment with the new WHO road map.

Updated costings analysis for the delivery of the SAFE strategy:

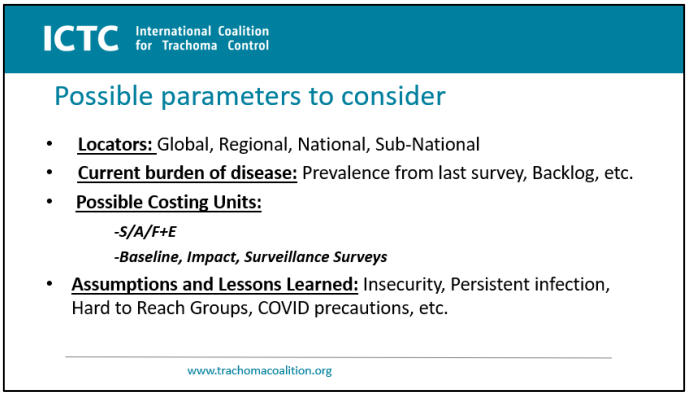
- In 2011, ICTC published the 2020INSight report, providing a snapshot of the global trachoma program at the time, our vision for 2020 elimination, and a route on how to achieve our vision. This was the global trachoma community's first attempt to estimate the cost of delivering the full SAFE strategy.

- Based on the best available data at the time, these cost estimates helped the trachoma community to approach donors, make an investment case for funding trachoma mapping and the scale up of the SAFE strategy, mobilizing millions of US dollars in new financing. As we look towards the new iteration of the strategic plan, we have a wealth of new information to draw upon to help us form updated and informed estimates.

- Another informative tool that has supported advocacy for global trachoma elimination was the GET2020 Alliance's 2016 plan of action ***Eliminating Trachoma: Accelerating Towards 2020***, which outlined what needed to be done to scale up programs and strengthen health systems to achieve global elimination of trachoma as a public health problem by 2020.

- In 2020, ICTC established a new Strategic Task Team composed of ICTC members and observers tasked with creating a new resource and tool for the trachoma community to update costings for trachoma interventions implementation, to inform a new strategic plan for the coming decade in alignment with the new road map to 2030.

Parameters under consideration for updated costings analysis:



The goal is to create updated estimates using broad strokes that help to articulate advocacy messages and investment gaps to support the global trachoma program, based on updated identified gaps that will play a role in the elimination of trachoma.

Already, through a series of interviews with health ministry officials in 2020 and ICTC meetings earlier this month, we have started to gather feedback on how the updated costings analysis can be utilized to best frame future support for regional plans, insecure settings, hard to reach populations (including indigenous and nomadic people), refugees and internally displaced populations, as well as to better articulate how investments in trachoma elimination can support overall health systems strengthening and capacity building.

Process to develop costings analysis and new strategic plan:

The process will include member and observer consultation, working through the ICTC strategic task team to complete the costings exercise, with input from national trachoma program managers; peer review article authored by national program managers; development of an ICTC document that serves as a tool for advocacy, influencing and resource mobilisation for the global trachoma program over the coming decade.

Reviewing ICTC's strategic direction and objectives:

1. **Mobilise advocacy to increase political will** for, and commitment to, trachoma elimination among donors and decision makers.

2. **Increase investment**, as required in trachoma elimination programs and for the scale up of SAFE interventions.
3. **Strengthen capacity and human resources** needed to achieve trachoma elimination by 2020.
4. **Coordinate the provision of technical assistance and the sharing of knowledge** to support high quality outcomes in trachoma elimination programs.
5. **Ensure an effective coalition model** and way of working that responds appropriately to changing contexts.

We will assess whether these priorities remain and whether nuanced changes in our operating context post COVID-19 might identify additional gaps and priorities.

Reflections on the last 5 years of ICTC's strategic plan:

- Advanced advocacy efforts to inform a range of policy and political discussions across the UK, US, and Germany through national NTD coalitions, supporting advocacy efforts to build political will in donor governments and to ensure data and evidence from the global trachoma program communicate the value of investment in trachoma, the SAFE strategy, and NTDs. This is alongside efforts that ICTC members have played with national partners in joint advocacy efforts at a national level in endemic countries.
- ICTC worked alongside a core group of stakeholders, including The Fred Hollows Foundation, Sightsavers, Clearly, Peek Vision, IAPB, and OneSight, through the Vision of the Commonwealth campaign first created by the Queen Elizabeth Diamond Jubilee Trust and now chaired by IAPB, in bringing trachoma and vision to the agenda of the 2018 Commonwealth Heads of Government summit. This resulted in new financing from the Commonwealth Fund to support trachoma elimination in selected Commonwealth countries across Africa, Asia, and the Pacific 2018 -2020. The campaign is currently working to carry this momentum on trachoma and vision to the June 2021 Commonwealth Heads of Government Meeting, chaired by the Government of Rwanda.
- ICTC also works with other NTD networks, like the NTD NGO Network (NNN) and Uniting to Combat NTDs, to ensure the global trachoma community has a seat and a voice on wider NTD platforms, to share knowledge, experiences, and preferred practices that support cross-sectoral collaboration with the WASH sector, data and surveillance, and communications efforts that can effectively share the successes, challenges, and solutions from the trachoma community.
- With financial support from ITI, ICTC supports capacity building and technical assistance through the submission of practical and policy-oriented articles that creates knowledge exchange through quarterly issues of the Community Eye Health Journal to a broader eye health community.
- Since 2012, ICTC has produced 18 preferred practices across the SAFE strategy, including transition planning toolkits, with translations available in French and some in Spanish and Portuguese, thanks to the support of ICTC members and observers.
- As we reflect on our recent collective achievements together, ICTC would like to thank Sightsavers and ITI for their ongoing support for ICTC's operation and support to the secretariat; and thanks to all ICTC members and observers for their contribution to ICTC's shared work and achievements.

Challenges for trachoma, NTDs, and eye health:

- **Learning from experiences-** COVID-19 has illustrated the degree of innovation and adaptability health programmes around the world are mobilising; the trachoma community must learn from others, including the eye health community, in order to maximise our next steps forward.

- **Multi-sectoral engagement-** this incudes WASH, disability inclusion, education, and nutrition sectors – and the marriage of hard science and advocacy, from the very outset.

- **Reframing the narrative for the 'final mile'-** as we move towards elimination as a public health problem - extending the health and development narrative beyond our own specific disease focus to consider common issues of sustainability, ongoing surveillance mechanisms, and effective health system strengthening.

- **Developing, engaging, and empowering a new generation of leaders in the NTD community-** how we identify and support stakeholders across research, programs, and spaces.

- **Bringing hard science and research together into evidence-based influencing-** we must ensure it is being taken up and informing action and policy.

- **Ensuring the leave no one behind-** agenda includes a focus on poverty alleviation, equity and inclusion, cross border issues, and insecure states.

- **Surveillance-** there is a risk of losing momentum and support when elimination targets are reached despite ongoing support needed for surveillance and control efforts.

- **Health systems strengthening-** in order to succeed in achieving elimination targets, the NTD response must support health systems and future-proof gains made against NTDs. Achieving elimination of NTDs cannot be done without scale-up of efforts being underpinned by strong health systems. Sustaining elimination requires addressing systemic challenges, such as governance, financing, health access, health, and equity.

- **Coalition building-** ICTC acts in a manner of 'proactive responsiveness' to the felt needs of the GET2020 Alliance. We will continue to refine our mode of collaboration to achieve our objectives in a manner that is agile, provides opportunities for members to engage, and is in close alignment with key GET2020 Alliance stakeholders. We know partnership and coalition building is hard; it requires trust, strong working relationships, and transparency in information sharing and work planning to establish a coalition that continues to function as an effective platform of collaboration. We are excited for the future ahead of us, with continued shared vision, courage, and evidence and data driven strategies, we can achieve the global elimination of trachoma as public health problem.

Compassion And Interconnectedness In Public Health

Presented by Dr. David Addiss, Director, Focus Area for Compassion and Ethics, The Task Force for Global Health (TFGH)

The term 'compassion' is used frequently in clinical medicine. A recent survey of hospital websites in the United States revealed that almost 50% advertise their 'compassionate care'[7]. In contrast, the word 'compassion' is infrequently heard in public health settings. Yet, at a 2010 meeting on compassion and global health at The Carter Center, participants concluded that "global health is rooted in the value of compassion and in an awareness of our interconnectedness"[8].

In many religious and spiritual traditions, compassion is regarded as arising from a deep awareness of how interconnected we are with each other and with all beings. Karen Armstrong, a religious scholar, argues that, arising from this awareness, the principle of compassion lies at the heart of all religious, ethical, and spiritual traditions – it's part of what makes us human[9].

But what is compassion – and how does it relate to public health? According to social psychology, compassion has three main elements: awareness of suffering; empathy, or emotional resonance; and action.

The infrequent use of the word 'compassion' in public health is likely related to several key challenges. First, public health deals with populations, often at great geographic, cultural, and economic distances. When one's work is guided by statistics or abstract ideas rather than by encounters with individual human beings, one's awareness of the human dimension of suffering may not be sufficient to generate empathy. Sometimes, empathy – putting ourselves in someone else's shoes – must be an intentional choice. At the 2010 meeting mentioned above, President Carter spoke about the intentionality of empathy. "When I became Commander in Chief, I had to make certain that we didn't reach a point where President Brezhnev felt the necessity of attacking my country. So, I would sit early in the morning in the Oval Office. I had a big globe there and I would turn the globe to Moscow and I would try to put myself in the position of Brezhnev."

A second challenge to compassion is that public health operates through complex bureaucracies and partnerships, which often shift the focus away from suffering individuals. And third, those bureaucracies and the governments that authorize public health action may, at times, have values that are in conflict with those of public health.

Responses to human suffering can be considered on a spectrum from cruelty at one extreme to mature compassion, informed by wisdom, at the other. Cruelty may be considered a 'far enemy' of compassion. But there are also 'near enemies' of compassion, such as pity. Mature compassion is rooted in solidarity, respect, and a profound awareness of interconnectedness, while pity is often an expression of superiority. The French philosopher and critic, Didier Fassin, is referring to pity when he says, "Compassion … always presupposes a relation of inequality… When compassion is exercised in the public space, it is always directed from above to below, from the more powerful to the more vulnerable"[10].

How can we in public health overcome these challenges to compassion in our work? Recent developments in compassion science suggest that we, as individuals, can improve our response to suffering through compassion training. Compassion is a skill that we can develop. But public health operates through organizations and

[7]Kienast Y. Prolegomenon of an (spatial) Epidemiology of Compassion: A first look at the potentiality of mapping compassion from a bioethical & epidemiological perspective. Thesis, Master of Arts in Bioethics, James T. Laney School of Graduate Studies of Emory University, 2020

[8] Conclusion of a Meeting on Compassion in Global Health, The Carter Center, Atlanta, September 2010. http://ccagh.org/resources/compassion-documentary/

[9] Charter for Compassion. https://charterforcompassion.org/charter/affirm

[10] Didier Fassin. Humanitarian Reason. Berkeley: University of California Press, 2012

systems. It is more difficult – although entirely possible – to create and sustain compassionate organizations. Compassionate leadership is essential, and increasingly, training in compassionate leadership is available, including for global health leaders[11].

Compassion appears to be gaining currency in public health. The WHO regards compassion as essential for quality health services. Dr. Tedros Adhanom Ghebreyesus, WHO Director-General, recently said, "Quality is not a given. It takes vision, planning, investment, compassion, meticulous execution, and rigorous monitoring, from the national level to the smallest, remotest clinic"[12]. In another example, the FMOH in Ethiopia recently identified compassion as a central pillar of its health sector transformation plan[13].

Slowly, the 'conspiracy of silence' around compassion in public health appears to be lifting. The key to nurturing compassion in public health was beautifully captured by Dr. Bill Foege when he addressed colleagues at CDC almost 40 years ago. He said, "If we are to maintain the reputation this institution now enjoys, it will be because in everything we do, behind everything we say, as the basis for every program decision we make—we will be willing to see faces"[14]. Not modern laboratories, more robust epidemiologic methods, or increased funding – as important as these are – but rather, the willingness to see, and be present to, the faces of suffering.

I'd like to express my gratitude to The Carter Center for being a such beacon of compassion in the world and to the Trachoma Control Program for so beautifully exemplifying compassionate action.

[11] Center for Compassionate Leadership. https://www.centerforcompassionateleadership.org/compassionate-leadership-and-resilience-training
[12] Ghebreyesus, TA. How could health care be anything other than high quality? The Lancet 2018; 6(11): e1140-e1141.
[13] Federal Democratic Republic of Ethiopia Ministry of Health, Health Sector Transformation Plan, October 2015, https://www.globalfinancingfacility.org/sites/gff_new/files/Ethiopia-health-system-transformationplan.
[14] Bill Foege, Smallpox, Gandhi, and CDC – Fifth Annual Joseph Mountin Lecture, Atlanta, October 26, 1984.

2021 Trachoma Control Program Review Recommendations

General Recommendations:

1. National Programs should coordinate with ITI for any special needs related to MDA, including securing catch-up treatments and special uses of Zithromax®.
2. Operational research should be conducted to see if more-frequent-than-annual MDA can control trachoma in persistent districts. Infection data should be used in the assessment to build the evidence base. Different strategies may be needed in different contexts.
3. Where relevant, donors and implementing partners should facilitate National Program coordination of MDA, TT surgery, and health education activities across international borders (e.g. Niger and Nigeria; South Sudan, Sudan, and Ethiopia).
4. National Programs should prioritize securing domestic financing towards programming, especially WASH planning and implementation, and post-elimination activities (incident TT case management and surveillance).
5. National Programs should prioritize collaborating and coordinating with relevant ministries to ensure trachoma prevalence and WASH coverage data are utilized as data driven approaches to WASH planning and implementation.
6. Operational research on WASH should be conducted to determine if different strategies are required towards trachoma control, especially in trachoma persistent hyperendemic districts.

Country-Specific Recommendations:

Ethiopia

1. The National Trachoma Program should strengthen TT case finding through both house-to-house and social mobilization strategies, with a special focus on districts with highest TT backlogs and hard to reach areas.
2. The National Trachoma Program should look at additional ways to maintain the number of IECWs across the country and reduce turnover.
3. The National Trachoma Program should consider alternative MDA strategies, specifically for "persistent" hyper-endemic districts and those districts returning above 5% at TSS (in place of the standard re-enrollment and re-survey approach).
4. The National Trachoma Program should ensure WASH implementation is prioritized to those districts with the highest and persistent TF prevalence – and ensure the provision of water is accompanied with behavior change communication interventions, sustainable maintenance, and monitoring and evaluation plans conducive to trachoma indicators.

Amhara Regional State, Ethiopia

1. The Amhara Regional Trachoma Program should prioritize TT case finding efforts in districts with the highest TT backlogs and hard to reach areas.
2. The Amhara Regional Trachoma Program should more widely implement systematic TT case finding during house-to-house MDA strategies.

3. The Amhara Regional Trachoma Program should consider alternative strategies to represent the remaining TT backlog, including using active TT case finding data rather than surveys, to demonstrate progress.
4. The Amhara Regional Trachoma Program and other regional entities should ensure all WASH activities and implementation are prioritized to those districts with the highest and persistent TF prevalence – and ensure the provision of water is accompanied with behavior change communication interventions, sustainable maintenance, and monitoring and evaluation plans conducive to trachoma indicators.

Mali

1. The National Program should establish a surveillance plan.
2. The National Program should ensure transition planning, including training of all relevant personnel, is conducted before the end of 2021.

Niger

1. The National Program should begin work as soon as possible on transition planning and dossier development.
2. The National Program should establish a surveillance plan.

South Sudan

1. The National Program should continue its work to secure sustained support for Unity state and other endemic districts beyond 2021. The Program should collaborate with ICTC to identify potential partners for collaboration.

Sudan

1. The National Program should focus efforts on confirming the accuracy of the current TT backlog estimate – this may include collaborating with researchers to reassess locality-level TT prevalence estimates.
2. The National Program should continue to work towards collaboration with the Academy of Health Sciences to increase TT surgery uptake.
3. The National Program should search for funding, through various donors and partners, to provide financial support specifically towards TT surgeries in the Darfur region.

Trachoma: The Disease

Trachoma, the world's leading cause of infectious blindness, is caused by repeated infections of the conjunctiva (the lining of the eye and eyelid) by the bacterium *Ct*. As of July 2020, the WHO estimates that 1.9 million people, the majority of whom are women, are blind due to trachoma, and another 137 million people are at risk of blindness or severe visual impairment due to trachoma in 45 countries[15]. The early stage of the disease is called *inflammatory trachoma* and is most common among children. Inflammatory trachoma can present as either the formation of whitish follicles, on the conjunctiva under the upper lid or around the cornea, or as an intense painful or uncomfortable inflammation with thickening of the conjunctiva. Women are repeatedly exposed to inflammatory trachoma in their role as primary caretakers of children. It is therefore not surprising to find that women develop chronic trachoma twice as often as men.Trachoma is transmitted through discharge from the eyes and nose of infected individuals: (i) by contact with hands, towels, and clothing or (ii) by flies, which are attracted to ocular and nasal discharge. As individuals are repeatedly infected with *Ct*, subsequent scarring of the conjunctiva deforms the eyelid margin, resulting in eyelashes turning inward and rubbing against the cornea. This condition, called *trichiasis*, causes disabling pain, physically abrades the cornea, and can lead to corneal opacity and blindess if not corrected.

In 1987, eye care experts and the WHO developed a simplified trachoma grading scale, which facilitated and standardized the diagnosis and identification of all stages of trachoma. In 1997, the WHO established the GET2020 Alliance, which brought international non-governmental development organizations, donors, and researchers together to work collectively in controlling trachoma. The World Health Assembly (WHA) adopted resolution WHA51.11 in 1998, targeting the global elimination of trachoma as a public health problem. In addition, with support from the Edna McConnell Clark Foundation and WHO, the SAFE strategy was created to control trachoma through community-based interventions. In 2004, ICTC, a coalition of NGOs, donors, academic institutions, and other partners, was created to support the GET2020 Alliance and to advocate for the implementation of the SAFE strategy. The SAFE strategy stands for: Surgery to correct TT, the advanced, blinding stage of the disease; Antibiotics to clear *Ct* infection; and Facial cleanliness as well as Environmental improvement to reduce transmission.

Another important development was the finding that the oral antibiotic, azithromycin, taken once or twice annually, is as effective in preventing chronic trachoma as six weeks of daily treatment with TEO, the previously recommended therapy. In 2009, Pfizer Inc., manufacturer of Zithromax®, recommitted to supporting the GET2020 Alliance goal of eliminating trachoma as a public health problem by the year 2020. Since the beginning of the donation in 1998, more than 940 million doses of Zithromax® have been donated by Pfizer Inc. and managed by ITI. The existence of the donation program has served to invigorate national trachoma programs and reinforce global support for the elimination of trachoma. In 2016, WHO published the dossier template for the validation of the elimination of trachoma as a public health problem. Between 2017 and 2018, seven countries fulfilled the criteria to be validated by WHO to have eliminated trachoma as a public health problem. In 2018, the global trachoma community celebrated three 20th anniversary milestones: The Carter Center began its pioneering work in 1998; WHA 51.11 called for the elimination of blinding trachoma; and Pfizer Inc. created ITI to lead the drug donation program. As of April 2021, 11 countries have been able to submit their dossier and receive validation by the WHO as having eliminated trachoma as a public health problem.

[15] The Weekly Epidemiological Record published on 24 July 2020 previously stated that, in May 2020, trachoma was a public health problem in all or large parts of 46 countries; two countries within those 46 claimed to have eliminated trachoma, yet by July 2020 data corroborating those claims had not yet been validated by the WHO.

TT and TF Thresholds for Disease Elimination

The achievement of the ***elimination of trachoma as a public health problem*** is defined by the WHO through two proxy indicators:

1) a prevalence of TT "unknown to the health system" of <0.2% in adults ages ≥15 years (approximately one case per 1,000 total population); and

2) a prevalence of TF in children ages 1–9 years of <5% in each (formerly) endemic district.

Through WHA reolution 51.11, trachoma can be eliminated as a public health problem through the implementation of the WHO-endorsed SAFE strategy. The strategy consists of Surgery, Antibiotic distribution at community level, Facial Cleanliness, and Environmental improvement. The surgery, or S component, should be offered to any individual with TT that is diagnosed to benefit from the surgical treatment. The surgery component also include case finding activities, which are recommended when prevalence of TT is ≥ 0.2% among individuals who are ≥15 years old. The A, F, and E components of the strategy are recommended for areas in which TF prevalence is ≥5% in children of ages 1-9.

To meet the criteria mentioned above, population-based prevalence surveys, amogst other activities, must be conducted in districts (enumeration units) suspected of being endemic at baseline and then at specified intervals after the start of interventions. Below are the success indicators and procedures often used to determine whether a district or region has achieved thresholds for the elimination of trachoma as a public health problem:

TIS: Must be conducted at least six months after final planned MDA. If the TF prevalence threshold has been met, the district enters a two-year hold period (no MDA required).

TT activities: If TF prevalence threshold is met, but not TT threshold, then the program must conduct case searching and management activities.

TSS: At the conclusion of the two-year hold period, after the final impact survey, a surveillance survey is undertaken. If TT and TF thresholds are met, then the district is considered as "transitioned" and no longer warrants interventions. If thresholds are not met, then the district is re-enrolled in TT activities and MDA as appropriate.

The Power of Partnership: Achieving Success with Compassion and Joy

The Twenty-Second Annual Trachoma Control Program Review

The Carter Center

March 22-23, 2021

Monday, March 22		
08:00 – 08:10 *10 mins*	Meeting Management & Welcome	Ms. Debbie Jackson-Cole & Ms. Kelly Callahan (Chair) Project Manager & Director, Trachoma Control Program MYT & The Carter Center
08:10 – 08:20 *10 mins*	Welcome & Opening Remarks	Ms. Paige Alexander, Mr. Jason Carter & Dr. Kashef Ijaz Chief Executive Officer, Chair – Board of Directors & Vice-President, Health Programs The Carter Center
08:20 – 08:25 *05 mins*	Goodwill Message	Dr. Tedros Adhanom Ghebreyesus Director-General World Health Organization
08:25 – 08:40 *15 mins*	Program Review Overview	Ms. Kelly Callahan Director, Trachoma Control Program The Carter Center
08:40 – 08:45 *05 mins*	Guided Mindfulness Meditation	Ms. Kenya Casey Senior Associate Director, Overseas Operations The Carter Center
08:45 – 09:00 *15 mins*	World Health Organization Update & NTD Roadmap	Dr. Mwelecele Ntuli Malecela NTD Director Department of Control of NTDs World Health Organization
09:00 – 09:30 *30 mins*	Destination Elimination, 20 Years of Trachoma Programming in Mali	Professor Lamine Traoré National Coordinator, National Eye Health Program Ministry of Health – Mali
09:30 – 10:00 *30 mins*	Niger SAFE Update	Dr. Kadri Boubacar Deputy Coordinator, National Eye Health Program Ministry of Health – Niger
10:00 – 10:15	Break	
10:15 – 10:45 *30 mins*	Ethiopia SAFE Update	Mr. Fikre Seife National NTD Program Coordinator Ministry of Health – Ethiopia
10:45 – 11:15 *30 mins*	Amhara SAFE Update	Dr. Hiwot Debebe Deputy Head Amhara Regional Health Bureau – Ethiopia
11:15 – 12:00 *45 mins*	Persistence Focus	Dr. Jeremiah Ngondi, Dr. Scott Nash & Dr. Harry Pickering Senior NTD Advisor, Epidemiologist & Dept. Pathology and Laboratory Medicine RTI, The Carter Center & UCLA
12:00 – 12:05 *05 mins*	Meeting Wrap-Up	Ms. Kelly Callahan Director, Trachoma Control Program The Carter Center

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The Twenty-Second Annual Trachoma Control Program Review

The Carter Center

March 22-23, 2021

Tuesday, March 23		
08:00 – 08:10 *10 mins*	Meeting Management & Chairperson Announcements	Ms. Debbie Jackson-Cole & Ms. Kelly Callahan (Chair) Project Manager & Director, Trachoma Control Program MYT & The Carter Center
08:10 – 08:40 *30 mins*	Sudan SAFE Update	Dr. Balgesa Elshafie National Coordinator for Trachoma Control Program Federal Ministry of Health – Sudan
08:40 – 09:10 *30 mins*	South Sudan SAFE Update	Mr. Makoy Logora Director for Guinea Worm Eradication and Director PC-NTDs Ministry of Health – South Sudan
09:10 – 09:25 *15 mins*	South Sudan: Face Washing Qualitative Study	Ms. Angelia Sanders Associate Director, Trachoma Control Program The Carter Center
09:25 – 09:35 *10 mins*	Health Campaign Effectiveness Coalition	Dr. Kristin Saarlas Director, Health Campaign Effectiveness Program Task Force for Global Health
09:35 – 10:00 *25 mins*	Photography Focus	Dr. Fahd Naufal & Miss Cassidy Whitson Post-Doctoral Fellow & Health Comms. Specialist Johns Hopkins University & Centers for Disease Control and Prevention (CDC)
10:00 – 10:15	Break	
10:15 – 10:30 *15 mins*	SWIFT Focus	Dr. Jeremy Keenan Director of International Programs Proctor Foundation
10:30 – 10:40 *10 mins*	International Trachoma Initiative & Pfizer Update	Dr. Paul Emerson & Miss Julie Jenson Director, International Trachoma Initiative; Interim Director, Children Without Worms & Director, Corporate Responsibility Task Force for Global Health & Pfizer Inc.
10:40 – 10:50 *10 mins*	International Coalition for Trachoma Control Update	Mr. Scott McPherson Senior Program Manager & Chair RTI International & International Coalition for Trachoma Control
10:50 – 11:00 *10 mins*	Compassion & Interconnectedness in Public Health	Dr. David Addiss Director, Focus Area for Compassion and Ethics (FACE) Task Force for Global Health
11:00 – 11:05 *05 mins*	Meeting Wrap-Up	Ms. Kelly Callahan Director, Trachoma Control Program The Carter Center
11:05 – 11:20 *15 mins*	Closing Remarks	Dr. Kashef Ijaz Vice-President, Health Programs The Carter Center

Please note this list is not a full representation of all meeting participants, since several individuals might have been participating or watching in the same room or attending the meeting via our Youtube Stream. The names below represent are individuals who attended and registered their affiliations via the Zoom Meeting Platform.

Brazil
Ms. Andreia De Pádua (MOH)

Ethiopia
Mr. Adisu Abebe (ARHB)
Dr. Solomon Aragie (The Carter Center)
Mr. Zebene Ayele (The Carter Center)
Mr. Ambahun Chernet (The Carter Center)
Dr. Hiwot Debebe (ARHB)
Mr. Abebe Fisseha (The Carter Center)
Mr. Begashaw Hailemariam (The Carter Center)
Dr. Fikreab Kebede (MOH)
Mr. Yemane Kejela (The Carter Center)
Mr. Berhanu Melak (The Carter Center)
Mr. Aderajew Mohammed (The Carter Center)
Mr. Birhanu Rita Nigussie (The Carter Center)
Mr. Eshetu Sata (The Carter Center)
Mr. Fikre Seife (MOH)
Mr. Ayalew Shiferaw (The Carter Center)
Dr. Zerihun Tadesse (The Carter Center)
Mr. Mulat Zerihun (The Carter Center)

Haiti
Dr. Luccene Desir

Mali
Dr. Abdoulaye Guindo (MOH)
Mr. Yaya Kamissoko (The Carter Center)
Mr. Sadi Moussa (The Carter Center)
Prof. Lamine Traoré (MOH)

Niger
Prof. Abdou Amza (MOH)
Mr. Nassirou Beido(MOH)
Dr. Kadri Boubacar (MOH)
Mr. Mohamed Salissou Kane (The Carter Center)
Mr. Barmou Moudi (The Carter Center)

Nigeria
Mr. Emmanuel Emukah (The Carter Center)
Mr. Emmanuel Miri (The Carter Center)
Dr. Obiageli Nebe (FMOH)
Mr. John Umaru (The Carter Center)

South Sudan
Mr. Peter Mahal Dhieu Akat (Ministry of Water Resources and Irrigation)
Ms. Lydia Banfield (The Carter Center)
Mr. Alfred Nurja (The Carter Center)
Mr. Makoy Samuel (MOH)
Ms. Katina Sommers (The Carter Center)
Mr. Jake Wheeler (The Carter Center)

Sudan
Ms. Zeinab Abdalla (The Carter Center)
Ms. Maha Adam (The Carter Center)
Ms. Maymoona Ahmed (The Carter Center)
Mr. Khalafallah Alasad (FMOH)
Dr. Hamdan Ali (FMOH)
Dr. Nabil Aziz Awadalla (The Carter Center)
Mr. Atif Elamin (The Carter Center)
Dr. Nadia Elemam (FMOH)
Mr. Mazin Elsanosi (The Carter Center)
Dr. Balgesa Elkheir Elshafie (FMOH)
Dr. Amani Mustafa (The Carter Center)
Mr. Isam Mohammed Ali Zarroug (FMOH)

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Ms. Suki McClatchey

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Dr. Babar Qureshi (IEH Initiative)
Ms. Girija Sankar

Centers for Disease Control and Prevention (CDC)
Dr. Paul Cantey
Mr. Ross Cox
Dr. Diana Martin
Ms. Cassidy Whitson

Conrad N. Hilton Foundation
Ms. Melissa Dang
Mr. Robert Miyashiro

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Ms. Aja Kuol
Ms. Kendra Palmer

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Francis I. Proctor Foundation at the University of California at San Francisco
Dr. Jeremy Keenan

Health Campaign Effectiveness Coalition – Task Force for Global Health (HCEC-TFGH)
Dr. Kristin Saarlas

Helen Keller International
Mr. Steven Reid
Mr. Ouassa Sanogo
Ms. Cleo Stern
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IMA World Health
Mr. Abdel Direny

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Mr. Scott McPherson

International Trachoma Initiative (ITI)
Mr. Menbere Alemu
Ms. Ana Bakhtiari
Dr. Paul Emerson
Dr. Teshome Gebre
Ms. PJ Hooper
Ms. Genevieve LaCon
Ms. Rosemary Pearson-Clarke

John and Kathleen Schreiber Foundation
Ms. Molly Cullum

Johns Hopkins University
Dr. Fahd Naufal (Wilmer Eye Institute)
Dr. Sheila West

Lions Clubs International Foundation
Ms. Gillian Gibbs
Dr. Patti Hill
Ms. Karen Kilberg
Mr. Brian Sheehan
Mr. Mama Tapo

London School of Hygiene and Tropical Medicine
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Ms. Kenya Casey
Mr. Drew Deathe
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Ms. Emily Griswold
Ms. Nehad Hamed
Dr. Karen Hamre
Ms. Madelle Hatch
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Ms. Nadha Illikkal
Ms. Molly Ison
Ms. Keya Jacoby
Ms. Kim Jensen
Mr. Jim Kavanaugh
Mr. Curtis Kohlhaas
Ms. Nicole Kruse
Mr. Phong Le
Ms. Amy Macklin
Mr. Ryan Mathura
Ms. Abby Miller
Ms. Sarah Mueller
Dr. Scott Nash
Ms. Mindze Nkanga
Dr. Greg Noland
Mr. Andrew Nute
Dr. Frank Richards
Dr. Angelia Sanders
Ms. Alethia Sanon
Ms. Vanessa Scholtens
Ms. Janet Shin
Ms. Courtney Gale Simmons
Ms. Rennie Sloan
Ms. Emily Staub
Ms. Shandal Sullivan
Mr. Marc Tewari
Mr. Adam Weiss
Ms. Bryony Whitelaw
Mr. Craig Withers
Ms. Sara Wom
Ms. Sarah Yerian
Ms. Sarah Yoss